The Builder.

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The Palace of Art and Industry: the Public Works of France.

OUR previous article* on the illustrations in the Exhibition building, of French engineering and public works, whilst referring to the divisions of the classification which comprise bridges and viaducts, spoke of those works as exemplifying steps of the recent progress in construction of deep-seated foundations, and others in rapid completion of a roadway, which are of great importance in the economic and financial aspect of bridge-building, and towards the object of perfecting routes and communications, whether in such a country as France, or such a town as London. At the conclusion of the same article, points of difference in the application of the compressed-air system of founding piers of bridges were adverted to; and of these, reserving for subsequent notice here, the matter of the improvements in the practice of construction of the roadway, we proceed to give some account.

The first idea of the compressed-air system, says Mr. Castor in a foot-note in his book mentioned in our last article, and say the French engineers lately in London, was put forth by Mr. Triger, a Frenchman, who, adopting the system in mining operations under water, suggested that it might be applied in bridge-building. It was actually so first applied, as the French allow, in the foundations of Rochester Bridge. In the volume of our Journal for 1856 in which appears the account of that bridge, may be found some particulars which we wrote, of the method of founding the piers.† To that invention or application the name of Mr. John Hughes was attached. How far, both he and the French engineer were anticipated by Lord Dundonald's patent of 1830, we will not now inquire. Mr. Hughes's method was adopted at Rochester when Dr. Potts's exhaustion system, it was discovered, would not answer the requirements. The late Mr. Brunel recognized the value of the compressed-air system, and made a great step in the application of it. His cylinder, which was of plate-iron, for the pier of the Saltash Bridge, was so much as 37 feet in diameter and 90 feet in length. It was strongly stayed, was closed at the top, and had the bottom divided into compartments, which, says a printed account, "were kept clear of water partly by a supply of compressed air, partly by pumping." The cylinder was "correctly placed on the rock through the mud which was there, 13 feet in depth, and which being loaded with shingle ballast, assisted to keep out the water."

Somewhat later than the work at Rochester we believe, the compressed-air system was applied in the bridge of Tzegedin over the Theiss in Hungary, and at Macon and Lyons in France. In the Kehl Bridge modifications of great importance were made, primarily to avoid the necessity of sinking the number of cylinders which would have been required for the considerable area of each pier. The modifications comprised the use of caissons of sheet iron (strengthened), three to the ordinary piers and four for those of larger area, each caisson being, in fact, little different from a diving-bell, into the roof of which were fixed two cylinders for alternate use, to be lengthened by addition at the top as the caisson descended, and also a third cylinder, starting from the bottom level, in which a dredging apparatus worked, scooping the materials of the bed of the river, and raising them to the summit. The compression of air was maintained only in the cylinders first mentioned and the caisson: the cylinder for the chain of buckets was open at the top, and dipped at bottom into water. The workmen removed the earth from beneath the lower edges of the caisson, throwing it to the centre to be taken up; and the whole apparatus descended by this means and the dredging of the river bed. The *béton* and masonry were built upon the caisson and inclosing the cylinders, as well as internally to support the iron ceiling; and the whole descended till the required depth was reached, when the cylinders and caisson were entirely filled, and the pier was complete.

In the Bordeaux Bridge, there were only cylinders; thus, these were filled, but not encased. There were, however, improvements upon the Rochester method of executing the work, we are told, in the use of the hydraulic press in lieu of the addition of weight to sink the cylinders, by which the sinking was under regulation, and did not take place by jerks; and instead of chambers at the top, requiring to be detached as often as the cylinder had to be lengthened, the upper part of the cylinder itself was arranged in a simple manner, with two removable floors, so that the materials, when raised, could be readily deposited, and thence speedily shot into barges.

In the Argenteuil Bridge, which is on the new Paris and Dieppe line, there is a further modification. We find it shown in Mr. Castor's book, and there described, as well as in the *Moniteur* of the 2nd of last month. In this most recent case, each cylinder-pile is composed of an outer cylinder-casing and an inner cylinder. The latter, the centrally-placed cylinder, rests on a base having the form of an inverted funnel, which is called *crinoline* by the workmen. The larger circumference of this funnel-shaped caisson corresponds with the bottom of the outer cylinder, the whole (*crinoline* and concentric-cylinders) being let down to the bed of the river by suspension-rods, ready for the commencement of the dredging and excavating work. The *béton* or masonry is filled in to the space between the two cylinders; and they are sunk by the weight. When the river-bed thus is reached, the work goes on, the inner tube or cylinder where a chain of scoop-buckets is set to work, and the cone-base, forming together the compressed-air portion of the arrangement, and the outer space, open at the top, being continually filled in with *béton*. By the aid of these and other improvements, the piers of the Argenteuil Bridge have been sunk 16 to 20 mètres below the level of the river-bed, and with great rapidity. Actually, the sinking and construction of the last pile was effected in twenty-five days; though as we learn, the soil was not of the most favourable character. The whole was completed under the supervision of the engineers of the Compagnie de l'Ouest,—Mr. Jullien, director; Mr. Martin, engineer-in-chief; and Mr. Léonard, "ingénieur ordinaire des ponts et chaussées." Mr. Castor, in his book, shadows forth other economic improvements applicable in future cases, such as the substitution of sheet-iron for cast, in the outer cylinder, where filled with *béton*. It is right to add that some of the methods above described resemble in certain points, features of a system for which Mr. Hughes obtained a patent, his second, in 1853.

It has been recently stated that Mr. Hawkshaw is adopting the compressed-air system in sinking the cylinders for the railway-bridge which is displacing the Hungerford suspension-bridge. That is an error. He is adopting the method in the case of a bridge at Londonderry, where he has the assistance of Mr. Hughes. But the cylinders for the bridge over the Thames are sunk by the aid of divers, who work in the ordinary manner. The reasons for the preference of the method in the latter case may be worth mentioning; for, considering the improvements in the dress and mechanical contrivances for diving as exemplified in many of the specimens of such apparatus in the Exhibition, the compressed-air or diving-bell system may not be necessarily the most conducive to durability in piers of all bridges, or even the most rapid method of proceeding. In the compressed-air system, from the moment that the foot of a cylinder in the descent has got below the level of the river-bed, the cylinder is kept free of water by a constant or repeated forcing of the air and water from its interior through the soil round about the foot, or so in great part. The disturbance of the soil which may result would, at first thought, not appear desirable. In the case of the Hungerford or Charing-cross bridge, the engineer knew that the cylinders would soon arrive at the London clay, when they could be pumped dry; so that, for all reasons, he preferred not to adopt the system which he used, at Londonderry, under other conditions of *strata*, even in passing through the Thames bed of gravel. In the foundations of the Lambeth Bridge by Mr. Barlow, in which as in the last case, cylinders are used, and without the application of the compressed-air system, not even has it been necessary to employ divers: indeed it is preferred to dispense with them. The cylinders are weighted; and they sink thus a considerable portion of the depth of the stratum of gravel. The removal of the gravel is effected by scoops; and after the cylinder reaches the clay, there is no difficulty. It is evident from these particulars of French and English practice that we are arriving at the utmost simplicity and economy in the construction of foundations; and our readers, knowing the importance to be attached even in social progress, to the provision of adequate routes in towns and countries, will approve of this digression from the notice of the models in the Exhibition.

We need not add much to the particulars we have given, above and heretofore, of the Kehl Bridge. The works of that bridge were commenced at the end of 1858; and, though the opening of the *route* did not take place till April, 1861, the foundations seem to have occupied but a small portion of the time, or about a month for the construction of each pier. The expense of the whole bridge is set down as seven millions of francs, or 280,000*l.*; of which sum 5,250,000 francs, or 210,000*l.*, are said to have belonged to the foundations. Messrs. Vuigner and Fleur-Saint-Denis, assisted by Mr. de Sappel, were the engineers directing the last-named portion of the works. The two first-mentioned gentlemen have published a description of their proceedings,* which would probably show whether the arrangement of the third cylinder, which is open at the top, provides the channel for the air forced out of the caisson, and so renders less probable any disturbance, real or apprehended, of the foundation, as in the use of cylinders without caissons.

The Bordeaux Bridge has a total length of about 500 mètres, which is divided into 7 spans, namely, two of 57 mètres 36 centimètres each, and five of 77 mètres 50 centimètres, measuring from centre to centre of piles. The superstructure is an ordinary arrangement of diagonal bracing in riveted iron. Each pier consists of two cylinder piles, at a distance of 8 mètres from centre to centre; each tube or cylinder being but 3 mètres 6 centi-

* See p. 433, *ante*.
† Vol. xiv., pages 417, and 480.

* "Pont sur le Rhin à Kehl: Détails Pratiques sur les dispositions générales et d'exécution de cet ouvrage d'art; par M. Emile Vuigner, Ingénieur en Chef de la Compagnie des Chemins de Fer de l'Est, et M. Fleur Saint-Denis, Ingénieur Principal de la Sixième Division de Construction." 2 vols., 4to., 1 vol. text, pp. xxiii. and 157; and atlas, plates 22. Paris: Dunod, Quai des Augustins 49. 1861.

mètres in diameter. The foundations were commenced on the 15th of September, 1858; and the bridge was opened on the 15th of August, 1860. The special difficulties arose from the tides, and the depth of water varying from 7 to 13 mètres, and from the swiftness of the current. The repeated changes of pressure rendered the hydraulic-press before spoken of, particularly suitable in sinking the tubes. By the successful application of steam-power,—the moving force being outside; though connexion to the chain of buckets inside, was not first easy,—it became possible to raise the excavated earth with such rapidity, that a tube could be sunk 2 mètres 65 centimètres in the space of twenty-four hours. The twelve tubes of the intermediate piers, were sunk in less than thirteen months; and the statement that, whilst the sinking of the first tube absorbed, though exceptionally, fifty-two days, that of the last demanded only nine days, its depth in the soil being 15 mètres 84 centimètres, gives some idea both of the actual gain in bridge-building, and the progress still that may be looked for. It may be well to note that in this case, the superstructure of the bridge was constructed with the aid of some kind of scaffolding. This seems to have consisted of a temporary work (*pont de service*), extending half across the river, which was removed to the other half, when the permament work was completed; a clear-way of 250 mètres being always left for the navigation. The total cost of this bridge was 2,994,000 francs (119,760*l.*), or 5,988 francs (239*l.* 10s. 4½d.) per mètre of length. The total expense of the six intermediate piers was 694,686 francs 60 centimes. Each pier, composed as above stated of two piles or cylinders, cost 115,781 francs 10 centimes, which would be 57,890 francs 55 centimes each cylinder; depth in the soil varying from 7 mètres 52 centimètres to 17 mètres 3 centimètres. The castings, the cylinders themselves, absorbed half the sum; the sinking operation having cost only 8,910 francs 10 centimes of the amount per cylinder, and the concrete 5,058 francs 64 centimes. Thus it appears that each cylinder of such a bridge as that over the Garonne, might, at French prices, be placed in position at a cost of less than 2,316*l.* But the experience at Argenteuil seems to us to point the way to having, without material increase of expense, a larger area of base for piers, and a better architectural effect than that of two pegs or posts. The price paid to the contractor for the superstructure of the Bordeaux bridge was at the rate of 66 centimes per kilogramme of wrought and plate iron fixed in place. The original designs for the bridge were made by the late Mr. Bommart; the definitive projects were by Messrs. Laroche-Tollay and Regnauld; and the works were completed under the direction of Mr. Surell, all engineers of various grades "des ponts et chaussées," and connected with the company of the Chemin de Fer du Midi.

The construction of the arch or truss of an iron bridge without centering, or support raised from below, is the next important description of recent practice of which we find illustrations in the French Public Works' Court. The Pont de Saint-Just, a road-bridge, across the Ardèche, was built to replace a stone bridge that had been carried away by a flood. The first intention after the accident, was to construct a suspension-bridge; but when the piers for that work had been commenced, the administration "des Ponts et Chaussées" decided in favour of the arched form, with five piers instead of the two as in the first project. The span of each of the six openings is slightly over 46¼ mètres, and is composed of five wrought-iron arched girders distant rather more than 1¼ mètre, and with a rise of 4¼ mètres. The breadth of the bridge is 7 mètres, between the balustrades. The principal members of the construction in each span are bolted with those of each adjoining span through the masonry of the pier. Thus, it is considered, the system of construction is capable of being regarded as the application of two different principles, one, the principle of the arch, and the other that of the console,—and that it is to the union of the two conditions that the stability of the construction, in spite of the slight rise of the arches, is due. Wrought iron is used, rather than cast, on the ground that the parts of the girder are subject chiefly to the tensile strain. We will now speak of the method adopted in placing these arched girders in their positions. Until recently, it was the practice to build the arches of all bridges on wooden centres. The system was adopted alike for bridges in cast-iron as for those in masonry; and, says the French account, it was retained even for the Bridge of Arcola, in Paris, which is of wrought-iron. One of our articles on Paris, however, has spoken of a different method of construction in the Pont des Saints-Pères, where for each arched girder, the form was first built in carpentry, and the iron-work bolted thereon, so as to constitute when finished, a tubular arc, the wood being encased by the iron. The old method of centres has several disadvantages, in the case of iron bridges. The arches, so to call them, in wrought-iron, like girders of plate-iron or trellis-work, are formed of fragments which have to be riveted, or otherwise put together, to ensure as nearly as possible rigidity; whilst there should be free access to the arches or girders, during construction, on the underside. Wooden centres therefore are considered as at least entailing supplementary operations and expense. In the particular case of the bridge over the Ardèche, there was another reason for not adopting ordinary centres, namely, the liability of the river to floods, which occurring suddenly, and increasing vastly the volume of water, would have endangered any arrangement of support from beneath the arches. The timber-work support was therefore provided *above* the line of level of the intended roadway, to suspend the iron-work; which last, in place of being put together *in situ*, was riveted in the most convenient position on shore, to be moved thence, entire, with the timber truss.

The truss of carpentry was formed on the system which the French call *Américain*, or the lattice principle, and was equal in length to that of the span of two arches. It was floored top and bottom for the passage of workmen, and to prevent torsion; and was otherwise as to strength, fashioned for the duty it had to perform. On the upper floor were fixed rails for two carriages, each of the carriages being furnished with two cranes on rollers. The piers and abutments of the bridge, were then surrounded with a simple arrangement of scaffolding to support wheels or rollers at a height corresponding with the base of the timber truss. This truss, which we have hitherto regarded as altogether on shore, on rollers, close to the abutment, was drawn by means of ropes across the first span, until its end rested on the first pier; one half the length of course remaining supported still on land. In this latter portion, the arched girders of iron were constructed. On their completion, they were taken up by means of the cranes, and carried along by the carriages on the lines of rails; and when they arrived over the intended position, they were dropped down to it. With the arched principals placed, the cross-bracing was easily filled in. The truss of carpentry was then moved on to the next pier, the ironwork was put together and braced as before, in the portion of the truss now over the first span; the timber-truss with its load of iron was again moved forward; and so the work continued and was completed. The advantages were extreme precision, security, rapidity, and economy. The total cost of this bridge of six spans, making a total length of 295 mètres 50 centimètres between the abutments, was 967,668 francs 71 centimes; of which 274,879 francs 20 centimes were for the masonry, or piers and abutments, and 692,789 francs 51 centimes, or under 27,711*l.* 12s., were for the ironwork superstructure. We regret that our information is wanting as to the price of the material and the labour. The general design was made by Mr. Oudry, for the *administration* of the "Ponts et Chaussées," and the details were worked out at the Creusot establishment of Messrs. Schneider & Co., whose engineer-in-chief is Mr. Mathieu. The trusses were fixed under the control of Mr. Joly, engineer-in-chief, and Mr. Vigouroux, *ingénieur ordinaire*, of the "Ponts et Chaussées."

We have not the date of the work just described, or that of the viaduct of Fribourg; and therefore, if the system in one led to that in the other, we cannot say which was actually considered to offer the advantage. The system in the Fribourg case however, dispensing altogether with a timber suspending truss, will be found to be well deserving attention.

The Fribourg Viaduct, which is for the passage of the Lausanne Railway to Fribourg and the Bernese frontier across the valley of the Sarine, much resembles recent works of British construction, some of which we have named in one of our notices of the British Division of Class 10 of the Exhibition. These viaducts have piers of great height, constructed, unless excepting their bases, of tiers of iron columns strongly cross-braced; and have trussed-girders of great span, which are sometimes on the lattice principle, sometimes on a trellis-principle of fewer intersections, and sometimes with a merely chevron-filling between the top and bottom members as in the form now so much employed. The bridge or viaduct now in question has a total length between the abutments of 328 mètres 84 centimètres; and crosses the stream at the great height of 76 mètres, measuring to the level of the rails. There are six piers, distant from one another 48 mètres 80 centimètres. Each of these piers is composed of iron-work for 44 mètres of the upper part of its height, and of masonry below that; the loftiest pier having a total height of 80 mètres from foundation to level of rails. The superstructure, carrying the rails in each span, is composed of four trellis-braced trusses; and each truss is formed of flat and angle-iron, the former material placed where tensile strain operates, and the latter to resist compression. The scantlings and spaces of the chief members of the truss vary, as usual in these bridges, so that the *maximum* of resistance and that of strain may be everywhere correspondent. In the piers, the mixed construction, metal and stone, was adopted, says the French account, because of doubts of the strength of the particular stone on the spot, as well as for rapidity of execution. The ironwork of the superstructure rests directly on that of the piers, or without interposition of friction-rollers, calculation and experience having shown that the flexure of the piers was sufficient to permit the extension and contraction of the trusses in the limits of the temperature. At the abutments, however, the ends of the trusses rest on rollers.

We now arrive at the most interesting subject in connexion with this viaduct, the placing in position the iron-work of the piers and superstructure without scaffolding. This was managed literally by hauling from one bank of the valley to the other, the superstructure; the piers being built with the aid of the latter, itself. Cranes, carefully devised to avoid producing torsion, were first erected on one of the abutments. In designing the whole length of trusses, the strength of a portion equal to two spans was calculated so that the length of one span might be sustained supported only at one end. The end of the truss which would be some time hanging without support from below, further was sustained by rods, which were carried over shear-legs placed in the position of the first pier and were tied to the truss at the distance corresponding with that of the second pier. The whole superstructure, ready to be hauled forwards, was placed on rollers 80 centimètres in diameter, each capable of sustaining a weight of 125,000 kilogrammes. It was then hauled so that the end came above the position of the first pier. The members of this pier were next carried in waggons along the rails of the superstructure, to the position named, where a crane dropped them down; and thus the pier was built. When this first pier was finished, it was mounted at the top with four rollers, preparatory to a second forward movement of the superstructure and the commencement of a second pier. The impression produced on us on learning that the superstructure underwent this onward movement, was that despite the rollers, a considerable pressure would be exerted against the piers. The pressure, however, is met by special precautions to maintain the verticality, that is by tying in the piers to the abutment. Chains by which that is effected are themselves supported by a subsidiary, a calculated catenary chain, as well as from the superstructure itself, so as to be always straight. The strength of the series of chains tying the piers, of course diminishes from the abutment which is the starting-point, to the last pier built. The advantages of the method of building, are regarded by the French engineers as very great. The hauling-operation was effected actually by sixteen men, in six hours of work for each span of 48 mètres 80 centimètres; and the loss of life in setting the masonry of the piers was vastly greater than that in fixing the iron-work. The weight of metal employed in the viaduct was 3,150,000 kilogrammes. Messrs. Schneider & Co. were the constructors; and to them and their engineer Mr. Mathieu, the credit for what we have described, ought to be given. The general dimensions of the viaduct, and the number of the piers, with their construction, part in masonry and part in metal, were prescribed by the engineers of the company.

WALK AND TALK IN ROME.

AFTER the Forum had become, to popular regards, the "Cow Field" (Campo Vaccino) of modern Rome, it need not surprise us to find the Capitol's western summit degraded from "Tarpeian Rock" into "Goats' Mountain" (Monte Coprino), whilst those animals might browse on

* See page 289, *ante*.

its height undisturbed by any of the buildings now occupying it. Two spots there are, one at the north-west, the other at the south of its acclivities, where, from obscure courts shut in by paltry houses, we look up at precipices of tufo-rock, crowned by the Palazza Caffarelli and private gardens, lofty enough for the "traitor's leap" hence, to "cure all ambition," though soil and rubbish have much accumulated around. Southward grows the flashy dark-green foliage of the *cactus opuntia* (or prickly pear); and a few courses of massive stonework along the ridge at the north-western side are referred by Nibby to the walls of Servius Tullius; by Canina, to the temple of Juno Moneta. On the other Capitoline summit, now occupied by the venerable Franciscan church, S. Maria in Aracœli, and approached by the lofty staircases thrown up in the fourteenth century, stood the superb temple of Jupiter Capitolinus (restored so magnificently in the design given by Canina), which remained still entire till the fifth century of our era, though long abandoned and closed before Stilichon, the chief minister of Honorius, removed the lamina of gold incrusting its portals; before Genseric, in the sackage of 455, carried away, among countless spoils, about half the gilt bronze tiles still covering its roof; after which its gradual dilapidation and final disappearance may be well accounted for. Very soon did this mount become the chief seat of municipal authority under the popes, as it had been of such differently-constituted power under the emperors; and perhaps the force of the same local traditions caused it to be chosen for two memorable transactions in recent story; when, in February, '49, was here proclaimed the downfall of the Papal sovereignty, and in the July following its re-establishment under the auspices of a victorious invader. So early as 850 we find it the site preferred for the coronation of an emperor, Louis, by a pope, Adrian II.; and in the eleventh century encumbered by the fortresses of the Corsi family, till their demolition; ordered to check the turbulent power of the owners, by the emperor Henry IV.; though the same family returned again to ensconce themselves here, in 1109. About twenty-five years subsequently the whole mount was given by an anti-pope, Anacletus, to the abbot of S. Maria, a monastic church on the site of the present Aracœli; and the document (afterwards confirmed by the legitimate pope, Innocent II.) gives a curious picture of the Capitol's condition at that period, with houses, orchards, gardens, underground chambers, ruins, and a spacious market-place, extending below, strewn with columns and masses of broken stonework:* The Tabularium, here styled Porticus Camellariæ, and considerable remains of a temple (Templum Majus), described as "Super Alafantum" (which Nibby interprets to mean the Tarpeian Rock), though what the real character of that edifice was no extant fragments allow us to infer. In 1143 the citizens rose against the government of Innocent II., and established in its stead a completely independent republican one, in the sequel to which the Capitol became the official seat of the Roman Senate; as, under whatever modifications and varied circumstances, it has continued to be ever since; the senators thenceforth being elected in front of their municipal palace, to the sound of the great bell. Only two years after this revolution, Lucius II. so forgot his sacerdotal dignity as to besiege this new seat of rival authority; and, in the struggle, which he personally directed, injuries from the stones thrown by the defenders proved fatal to his life. The Tabularium was now inhabited by numerous families, who were actually divided over two parishes within these same walls; those in the upper stories being of S. Maria, those in the lowest of SS. Sergio e Bacco, the two churches upon and at the foot of the Capitoline Hill. In the fourteenth century the whole mount was held with military force by the emperor Henry VII., after whose departure the populace again rose supreme above the aristocratic power; the imperial party being attacked and driven away from this stronghold. In 1347, Rienzi restored the now ruinous Senatorial Palace: after his expulsion it was taken from the magistracy by Jacopo Savelli; and again, in 1354, assailed in the insurrection against the once-idolized Tribune, after his *second* instalment for brief domination. In 1394 the whole summit was fortified by Boniface IX., and those two lofty square towers of brick raised to overlook the Forum; where they still stand above the massive structures of the Tabularium, flanking that more modern residence of the Senate, begun by Innocent VII. (1405); completed by Nicholas V., whose name is still read on its front above the Forum; but restored, and its present façade, on the northern side, built, in the sixteenth century, from the designs of Michelangelo.*

At the foot of the descent hence, by the modern road, into the Forum, stands at our right the unpretending little church *S. Giuseppe die Falegnami*, built above those horrific Mamertine prisons whose two cells, known since the Middle Ages as *S. Pietro in Carcere*, from the tradition of the confinement of St. Peter and St. Paul, till hence led out to martyrdom, are both converted into oratories. Their Mediæval story is obscure; but it is certain that no consecration for worship had taken place here before the ninth century. Descending by the modern stairs made in the thickness of the walls, we notice, in their masonry, on one side the concave form of a bearded head under a grating, and an epigraph telling how St. Peter, when led into the lower dungeon, was brutally thrust against this wall by the gaoler, and left this impression of his profile thus miraculously impressed in the stones yielding like wax!—a prodigy mentioned by different writers of the last three centuries, but by none (that we can ascertain) of any earlier epoch. Baronius is the first to describe another miracle whose supposed result is still shown here,—the gushing of a fountain in the lower dungeon to supply water for the baptism, by those two apostles, of their gaolers, Processus and Martinianus, with forty-seven other converted captives. Tradition, but not history, refers the first dedication of these prisons for sacred rites to Constantine, on the instance of Pope St. Sylvester, as once accepted on authority of an apocryphal letter ascribed to St. Jerome (see Polidoro Virgilio, *De Rerum Inventoribus*). The church above them, belonging to the Guild of Carpenters under patronage of St. Joseph, does not date earlier than 1598; for that confraternity, after taking a lease of the prisons from the parish priest of S. Martina, the adjacent church, had first satisfied themselves with a mere wooden chapel, thrown up over these subterraneans in 1540. At their expense was formed, 1665, the pavement, raised considerably above the original level of the lower dungeon; and a conduit opened from this interior is now ignorantly pointed out as a communication with some catacombs miles distant. In 1743 was instituted, by Benedict XIV., an annual observance in this prison chapel,—affecting from its contrast with the scenes and associations,—the pontifical High Mass,—attended by the prelates of one of the administrative colleges, on the 6th day, within the octave of St. Peter's; the festival most splendidly celebrated of all in Rome.

The modern edifice has inclosed within a vestibule the ancient front of these prisons, still bearing the epigraph which tells that two consuls restored them in the year of the city 775 (A.D. 21). Their horror-striking character is best described in the words of Sallust ("De Bello Catilin." c. 55); nor does the vaunt of Juvenal—

"Viderunt uno contentam carcere Romam"—

admit of interpretation very honourable to Rome's humanity when we see what that one *carcer* was, and learn that archæologists assume the existence of several chambers extending under the Capitol; only one of which, Ancus Martius's foundation, still remains on the side above the Forum. Ampère ("Histoire Romaine à Rome") ingeniously argues against the scarcely-tenable but hitherto received views that the *lower* prison, ascribed to Servius Tullius, is the additional one of *later* origin. Its construction in stupendous quadrilateral blocks of volcanic pietra albana, projecting forward so as to give to the whole the form of a truncated cone, being, indeed, unintelligible, upon this theory, as a work subsequent to that above it, and of much narrower dimensions. Abeken ("Mittel. Ital.") saw in the Tullian prison merely a *cistern*, whence water was drawn through the round orifice, by which afterwards captives were let down into it; and Ampère suggests a Pelasgic origin, anterior to every other building in Rome.

Near this church we may enter a narrow street, where, in an obscure court (little better than a pigstye), is seen all that remains of the Forum of Cæsar; founded by him after the battle of Pharsalia; and said to have been more splendid than was the then Forum *par excellence*, "Roman"; the Temple of Venus Genetrix, standing within its quadrangular inclosure; beside that goddess's image a beautiful statue of Cleopatra in its cella; and the equestrian statue of the Dictator, in gilt bronze; the horse a work by Lysippos, before its front. All left of these monuments are a few courses of structure in *lapis Gabinas*, stupendous squared blocks, with constructive arches, at one side of that miserable little court; though till the sixteenth century remained majestic ruins of the atrium, or sacred inclosure, as seen and measured by Palladio. The scarcity of notices respecting the fate of these ruins in the Middle Ages may lead us to infer an early demolition, or total ignorance of their origin. What we still see is a remnant of that outer girdle of walls; and we are told that ten millions sesterces were paid for the mere ground thus appropriated.

Pursuing our stroll through the *other* Forum, we may regret (and a distinguished archæologist has expressed that regret) to see renewed the plantation of trees along the road through its centre, cut down during the siege in '49; and though affording pleasant shelter, much better missed from this scene of monumental antiquities. The Arch of Titus, to which this avenue extends, judiciously and completely restored under Pius VII., is only too obvious, too sharply defined a renovation of the antique as we now behold it; but its reliefs, among the finest of Græco-Roman art, display sad mutilation in almost all the heads of the figures representing the triumphal procession with the spoils from Jerusalem; though a drawing by Giuliano da Sangallo, at the Barberini Library (dated 1465), shows this very sculpture with all its figures perfect! To Mediæval Rome it was known as the Arch of the Seven Candlesticks (*septem lucernarum*), from the sacred objects here represented among the spoils, with the trumpets and altar of incense. In passing under it, used to be made halt another gorgeous procession, on the progress of the popes to the Lateran for their solemn installation; that here, beside the trophy of Jerusalem's fall and Israelite subjection, the Jews of this city might present a copy of the Pentateuch to the new pontiff, with profession of loyalty towards his person. A French writer, quoted by Cancellieri,* states that this people never would voluntarily pass under the monument of their conquest, and were therefore allowed to open a way expressly for their use at one side. The adjacent monastery of S. Maria Nuova comprises within its garden-walls one of the two correspondent cellæ of Adrian's double temple to Venus and Rome; and, as Flaminius Vacca tells us, once, in the fifteenth century, extended its demesne so far as to include the entire Colosseum after those ruins had been handed over to the Olivetan monks by Eugenius IV.; till, on that pope's death, the people rose to put down such intolerable monopoly; threw down the invidious inclosure; and restored Rome's grand old Amphitheatre to public property. In the excavations carried on here under Nibby's direction, 1827-29, were found several tiles with the mark of a consulate answering to A.D. 123,—two years later than the assumed date of the foundation, to commemorate which were the struck coins with the proud legend, *Urbs Roma Æterna*. The area of the great platform, 500 feet by 300 feet, in the midst of which this temple stood, occupied the site of the Atrium and the Nerovian Palace, and also of many other earlier buildings traced in modern researches. A quadrangular portico of granite colonnades, 400 feet by 200 feet, surrounded this forecourt of a sanctuary,—one of the most splendid ever raised to heathen worship in Rome; and a few broken shafts strewn around the monastic walls still show the vast scale of this pillared

* Till 1250 this was a Benedictine monastery, and the staircase of 124 marble steps, thrown up before its front in 1348, are said by Andrea Fulvio to have been taken from the temple of Quirinus on the Quirinal Hill. Emperors used to ascend the steps of Jupiter's sanctuary on their knees; and even in the seventeenth century, Mabillon found the practice still kept up by Roman devotees of approaching this church in like humble attitude. Below it, on the side towards the Forum, are some brick walls, supposed to clothe the vast substructures, by which the whole height was supported to fortify the position of that vanished temple. In Mediæval story we find this Aracœli convent serving as a fortress, and as the residence of the Capitoline judges, who held their tribunals in the church, till 1521; the judgment-seat of the senator still standing within these sacred walls!

* One of Pope Boniface's towers is curtailed of its original height. The two lateral palaces, appropriated to the municipal conservators and the museum, were not built till about a century later; also from designs ascribed to Michelangelo; but altered (and certainly little to the credit of any architect in their style or effect) by Del Duca. The easy-ascending staircase on this, the Capitol's northern side, was made under Paul III. for the occasion of the emperor Charles's visit, 1536. In no one detail are these modern Capitoline buildings either graceful or imposing, though the lofty tower of the observatory forms a good object in the city's *ensemble*.

* Dijon, in 1776; and the same prejudice, or rather honourable sensibility, is mentioned by Madame de Staël; but the Abate Cancellieri does not confirm a report creditable to the Jewish feeling; nor can we see, in the isolation of the arch, how a pathway could have been required for avoiding it. The formula of homage and presentation by the Israelites was omitted at the last papal "Possesso" though the occasion's celebrations under Pius IX. had more than the usual norma of magnificence.

architecture. Proconnesian marble encausted the temple and formed the pavement of its terrace-area; and Flaminius Vacca, who saw that pavement uprooted, gives the measurement of its slabs 13 palms by 9 palms, and 3 palms in thickness. Giallo antico and cipollino clothed the walls of the cella, where vestiges of such decoration have been found. A large mass of Corinthian cornice in Proconnesian marble, with folial decoration and egg-mouldings of great beauty, brought to light 1825, now stands against the walls beside the outer cella facing the Colosseum; and at the foot of the terrace, between the two ruins, we see the immense square basement of brick to which was removed the colossal statue of Nero after the final destruction of his Golden House. Till the fifth century stood before Adrian's temple, on the side towards the Forum, the bronze figure of Clelia, mentioned by Livy and Seneca; till the sixth century the elephants, also bronze, to which Cassiodorus alludes (lx. Ep. 10). Nibby supposes the two existing cellæ are those rebuilt by Maxentius about the year 307, after a conflagration that so nearly destroyed Adrian's edifice as to require a restoration; allowing this to be reckoned by Aurelius Victor among the former emperor's grandest public works. Strange is the fact that, till 391, the domination of Christianity had not caused this, like other temples, to be either dismantled or closed; but in that year the laws of Theodosius, more strictly enforced than previous edicts against paganism, obliged this fane also to be shut up and abandoned. Till 625, however, its main buildings still rose intact; now to be despoiled by Pope Honorius I. of its entire roofing in bronze tiles; but not before permission asked by the pope, and granted by the emperor Heraclius, then on his visit to Rome, for adorning St. Peter's, where they were soon again a prey, now to be lost for ever, on the sacking of that Basilica by the Saracens in 846. It was in 625 arose a church of the Blesed Virgin within the walls of this Venus-temple (a striking opposition, like many others between the movements of the two worships); and S. Maria Antiqua was its name known till the eighth century, when the church, being embellished or restored by Nicholas I., took the title of S. Maria Nuova, now sometimes exchanged for that of S. Francesca Romana.* From the seventh to the twelfth century, it is supposed, the work of spoliation, induced by the profusion of rich marbles strewn over these ruins, continued uninterruptedly. The almost entire rebuilding of the decayed city, after the return of the Papal court from Avignon, supplied further pretext for demolitions in the fifteenth and sixteenth centuries;† and Paul II. is believed mainly responsible for the final destruction of Adrian's superb fane, in the object of supplying material to the great castellated palace he built on the Piazza di Venezia, one of the few patrician residences of that period here still kept up unaltered. In 1819 were discovered remains of the great staircase ascending this terrace from the Via Sacra, and carried along its whole western limit; with statues that rose, at intervals, on basements, one of which is still imperfectly preserved. Nibby discovered the entire stratum, now covering this terrace area in lieu of the lost pavement, to be a congeries of marble fragments and splinters, in part calcined and mixed with carbonized matter, in many examples showing the original character of architectonic decoration; and with learned indignation that archæologist narrates what he had seen when in the mass of ruins was found a lime-kiln entirely lined with porphyry fragments broken up, as evident, by sharp instruments in the hands of spoilers! Interesting is it to learn, in the poetry of Prudentius, what this temple was in the fifth century, with its pomp of Pagan rites amid an increasing population of Christians, and what were *their* naturally indignant feelings at this spectacle.

* To that matron saint, of the fifteenth century, it is also dedicated, because containing her tomb, with a beautifu ly finished relief by Bernini; and in the seventeenth century was added the present façade, whose pasteboard flimsiness of style offensively contrasts with the majesty of ruin around.

† Then were disturbed the very foundations, to remove the peperino and travertines that incrusted the outside fronts of this terrace; and from this period the whole, temple and area, must have become, what we now see, a mere skeleton; the brickwork of the two cellæ, with their richly-coffered vaulting in the apses placed back to back; a few remains of contiguous walls, broken columns of granite and cipollino strewn over the wide surface, amid which a spacious monastery dwindles into insignificance; and the elevation, stretching from the Basilica of Constantine to the Colosseum, now rather like a natural mound than an artificial structure. Since the earlier years of this century, no attempt has been made to discover or check the progress of decay any further; and the drill of French soldiers or Roman recruits now finds an appropriate field on this ample platform, as under the vast arcades of that Basilica near. Entering the convent garden, through a gloomy vaulted corridor, we see much more of the cella on this side, than remains of that external, with the lateral walls, to the right; still surmounted by a portion of the coffered vault; and pierced by niches, for statuary; as are also the two apses, alternately arched and quadrate; but of the rich incrustation and porphyry columns descr bed, are no traces, at least distinguishable from below. The two principal statues were seated in their niches; and it is well known how the caustic criticism of Apollodorus cost that architect his life,—that the deities, if they stood up, would be too tall f r, and indeed unable to leave, their sanctuary; besides the comment and the effect, very well for an emperor!

DISJOINTED NOTES OF THE INTERNATIONAL EXHIBITION.

Lead Pencils.—Amongst the many interesting operations going on in the Process Court, which continues to attract numbers of the visitors, is that of making artists' and account-book pencils by Mr. Cohen's improved method. Slips of his continuous compressed Cumberland lead having been prepared of the exact size and degree required, the workman proceeds to fill the centre cavity of the cedar with one unbroken length of lead; thus rendering each pencil, as the maker maintains, unvarying in its degree throughout, and obviating the inconveniences arising from the ordinary method of laying in several small pieces in succession, which snap at each joint, and incur the further liability of having different degrees mixed in one pencil. The lead is manufactured from the Borrowdale plumbago; which, cleansed from all impurity, is smooth and tough in texture. Mr. Cohen claims to have supplied those requirements in a pencil set forth in our pages on more occasions than one; and we are quite ready to admit that we have found some samples that he submitted to us remarkably good.

Terra Cotta.—We have seen nothing better in the shape of architectural terra-cotta than the specimens exhibited in the North Court, central division, by Mr. Blashfield, of the Stamford Pottery Works. The vases are admirable; the brickwork sharp and true; and there are some small figures which are very beautiful.

Large Pipes of Pottery.—In this same court, Messrs. Cliff & Son, of Wortley, near Leeds, exhibit samples of salt-glazed socketed pipes, for conveyance of water and sewage, of more than ordinary size. Unless we are wrongly informed, the assertion of another exhibitor, as to having produced 4-feet pipes, is incorrect. Messrs. Cliff & Son, however, have made pipes of glazed ware 4 feet 6 inches diameter; each pipe weighing upwards of 25 cwt. In the centre of the stall is an egg-shaped pipe, 36 inches by 24 inches, which is extensively used in the provinces as a main drain, in place of 9-inch brickwork and stoneware invert, and is far less costly. There is also a circular pipe of 30-inch diameter, quantities of which have been supplied for water culverts. The sockets are all uniform; being made by machinery at the same time as the pipe itself. The joints of such pipes offer the greatest difficulty at present, as they will not resist hydraulic pressure to the same extent as the pipes themselves.

Cast Iron.—Amongst the architectural cast-iron appliances, those exhibited by Messrs. Macfarlane, Walter, & Co., of Glasgow, stand very high. These are in Class 10, and include crestings, bannerets, pipes, finials, and vanes. Both in design and workmanship they make considerable claims on attention. As castings, we have found nothing better.

Tasmania.—The timber trophy illustrating Tasmanian woods deserves the attention of all persons interested in ship-building, railways, public buildings, and other purposes to which timber is applied. It will, probably, not less clearly illustrate the peculiar adaptability of Tasmanian cabinet woods, from their beauty of colour and marking, for ornamental furniture and other requirements of modern elegance and refinement. We learn from a useful report drawn up by Mr. George Whiting, secretary to the commissioners for Tasmania, that, to render this trophy a temporary museum of the more useful Tasmanian woods, specimens have been procured from the oldest public buildings of the colony, each of which is fully labelled, and will tell its own tale. The Old Gaol and the Old Court House of Hobart Town have furnished sleepers, door-posts, flooring-joists, boards, window-lintels, and architraves,—of Huon pine, blue gum, and stringy-bark, which are as sound as when built in forty years ago. Nearly all the timber of the Old Hobart Town Court House has been found to be sound, and has been used in the erection of the New Post-office just completed on the same site. But the builder and the railway engineer may ask, "Will Tasmanian timber resist equally well the atmospheric influences of the open air?" The naval architect will inquire into its "behaviour" under water. Let the old piles, and planks, and posts, in the trophy supply the answer. Some of these old piles, which have been split down longitudinally in order to facilitate inspection, have been partly submerged daily, as the tide rose and fell, for periods up to twenty-one years, whilst forming part of the wharfs of Hobart Town. Blue gum and other planks from the wharf platform will show their power of resistance, for the same period, of copious showers, hot sunshine, dry winds, and heavy traffic. A Tasmanian schooner, built of blue gum,—the *Flying Squirrel*, 97 tons,—has twice been thrown by the surf above high-water mark; and on being got off did not exhibit the slightest defection in her lines, or a sprung trenail, and has never even required to be pumped since undergoing this severe ordeal. It appears, from experiments which are related, that blue gum will sustain about double the weight of English oak before it breaks; and will even recover its elasticity after bearing a weight at which oak will break. Its mean cohesive power beyond oak is nearly, but not quite, in the proportion of 3 to 1. It may not, perhaps, be improper here to suggest that the appointment of a commission of inquiry to examine and report on the various woods in the Exhibition might possibly obtain results of even national importance, now that a supply of British oak can no longer be relied on. Appended to Mr. Whiting's report is a paper by Dr. E. S. Hall, "On the Health and Sanitary Condition of Tasmania," wherein, after giving some tables, he says:—"1,479 deaths out of a population of 89,977 persons is at the rate of 16·43, or less than 16½ per 1,000; so that the mortality rate of all Tasmania is less than that of the 63 healthiest registration districts of England and Wales — 17 per 1,000 — which the Registrar-General of England adopts as a normal standard for death rates. In the purely rural population of Tasmania, counting exclusive of those associated with the urban districts of Hobart Town and Launceston—53,667—the deaths in 1861 amounted only to 619, being at the rate of 11·53, or 11½ per 1,000. Glendale, in Northumberland, which has the smallest death rate in the English returns, has 15 per 1,000. But even this contrast, favourable as it is to Tasmania, does not exhibit the whole superiority."

Convict Work.—In the Western Australian Court, a cabinet, constructed by the convicts in the establishment at Freemantle, will be viewed with interest. It comprises various woods which the colony produces. The drawers are lined with sandal-wood of a fine perfume. The pedestal on which it stands is a section of a curious excrescence occasionally found growing from the native mahogany, of which there are several other specimens in the same court.

Hard Woods and Fancy Woods.—In the Eastern Annexe a very remarkable collection of woods is exhibited by Messrs. Fauntleroy, Robert, & Co. It takes the shape of a large model of the west front of the Royal Exchange (London), constructed of various specimens of hard and other woods, to the number of *five hundred or more*, together with the corozo nut, or vegetable ivory, and coquilla nuts. The whole are arranged so as to display the merit of each, for turnery and other purposes. The reference list which they have printed is valuable. In addition to the woods enumerated, the board on which the model rests is covered with a choice variety of veneers in mosaic; including, amongst others, Amboyna, Hungarian ash, Russian and other maples, rosewoods, New Zealand totara wood, walnut, satin-wood, fustic, birch, holly, cocus wood, figured ebony, zebra wood, mahogany, Yacca wood, king wood, partridge wood, tulip wood, black ebony, cam wood, &c., &c. This model ought certainly to find its place in one of our public museums—that of Kew, for example.

A Gigantic Steam Hammer.—In the Western Annexe will be found a fifteen-ton hammer, which has been for some time in use at the Ouseburn Engine Works. The hammer is substantially a huge perpendicular battering-ram, but may be worked by the strength of a child, the only exertion needed being that of turning on or off the steam. It is constructed upon Mr. R. Morrison's first patent, is single-acting, and worked by hand. The cylinder is 46 inches in diameter, with a clear fall of stroke of 8½ feet, and, with its covers and glands, weighs 32 tons; the hammer-bar, 15 tons; the two frames, 34 tons; the anvil-block, bed-plate, and sockets for crane-posts, and bottom foundation-plates, 120 tons: making in all, 210 tons. The foundation for carrying the whole is composed of concrete, timber, and stonework, and

is 44 feet one way, 26 feet the other way, and 14 feet deep. So light a blow can be struck with this hammer, notwithstanding its power and weight, and with such certainty, as to crack a nut under it without spoiling the kernel. The height from the surface of the ground to the underside of the frames is 11 feet 3 inches; so that the largest piece of work that can be got under the hammer can be turned round in every way without being taken from under the hammer; and the moving mass of the hammer itself being of malleable iron, and in one solid piece, prevents the possibility of breaking. The length of the cylinder over the top and bottom covers which form the guides is 14 feet; so that, whatever may be the size of the forging under the hammer, the bar is always guided for the length of 14 feet.

SUMMER EXCURSIONS.

THE season for excursions which may be made both instructive and pleasant has come; and although, this year, the International Exhibition will prove a great source of attraction townwards, there is much to be done in the way of country excursions, not only by our professional readers, but by a vast portion of the general population. While wandering in many of the rural parts of England; in which, studded amid beautiful and picturesque scenery, are objects of great interest, many must have been painfully struck by the want of knowledge amongst the resident population respecting those objects; and this even in localities where there have long been national schools, and a large distribution of cheap books and useful periodicals.

In the neighbourhoods of most villages there are objects which might, with advantage, be studied both by old and by young, but which (like London sights among Londoners) are little heeded or thought of by those residing near; and in many instances a stranger visiting the district finds it difficult to obtain information, unless he bring it with him in the form of guide-books and local histories. In several of the poorest parts of both the Borough and the City sides of the metropolis, the clergymen and others connected with Sunday schools, have organized summer excursions to healthy spots; and these have been a means of doing much good. It is gratifying to find that such excursions are becoming each year more common; and, in considering this question, it should not be forgotten that, great as is the delight felt by the dwellers in the courts and alleys of the capital, and of other large towns, when they can escape into the green fields, woods, and commons of the unbricked country; not less would be the interest felt by those living in the villages and country, if facilities were afforded them of visiting, under proper guidance, the most important curiosities of the cities and towns at no great distance from them.

Within the heart of London, but more particularly in the outlying districts and the suburbs, there are many thousands who have never seen the interior of St. Paul's Cathedral, Westminster Abbey, and other remarkable and instructive features of the metropolis; and yet how easily could this be managed without neglecting country trips in connexion with the national schools, district churches, &c. We have before asserted that there is good teaching in the ancient historical spots of London,—in the picture-galleries, and other national collections; and to a certain extent there is much in our chief towns which might be made in the same way available.

Not long since we made inquiry, in the parts surrounding two important cathedral cities, and were surprised to find how small a number, in proportion, of persons who had arrived at years of maturity had seen those great and ancient edifices which are amongst the chief glories of our land.

In the counties of Northumberland and Durham, in both the large and small towns and villages near the coast, well-organized steamboat excursions to the old castles and picturesque scenery have become very common; nor are the places inland, which have interest and can be reached by railway, been neglected. In several instances the great manufacturers, shipbuilders, and proprietors of other large establishments, have thrown their premises open, at convenient times, to the inspection of large parties of excursionists.

We have accounts from other localities; but must at present conclude with a brief notice of some village excursions which have been arranged chiefly by the exertions of Professor Henslow. This gentleman first attempted the formation of a village excursion party in 1849; proposing, to as many members of the Stoke and Melford (Suffolk) Benefit Club as should be willing, to make an excursion to Ipswich: each member had the privilege of taking a person with whom he was acquainted, and for whose good conduct he could be responsible. On this occasion Messrs. Ransome & May threw open their manufactory to the rustic visitors, who were about fifty in number. The party consisted of both sexes, and all were over fourteen years of age. Most of those persons had never been beyond their village of Hitcham, or, at farthest, the adjoining parishes; but were thus tempted to widen their knowledge. A payment was demanded from the labourers which, although not sufficient to defray the railway and other expenses, still served to make the excursionists feel independent. Several of the farmers kindly lent their waggons to convey the party to the Stowmarket station, distant about seven miles. At Ipswich the visitors inspected with wonder the manufactory above mentioned; saw the working of the steam-hammers and other machinery; and, having noted other curiosities, returned by the evening train to their rural homes. The following year (1850), the excursion, which was much more numerously attended, was made to the seaside; and great was the general enjoyment. Since then, year after year, Professor Henslow has accompanied his village parties to different places,—amongst them to Harwich, Norwich, and Cambridge; and the results have been most satisfactory. Besides the pleasure afforded, it has been very gratifying to notice, on these occasions, the readiness with which places of interest have been opened to the excursionists, and the kindness with which they have been treated both by rich and poor.

THE ACCIDENT TO THE METROPOLITAN RAILWAY.

So many extraordinary accounts of the accident having appeared in the daily publications, and not one of them being correct, you will perhaps be able to afford space for a more accurate account of the accident from first to last: it is a casualty that so seldom happens, that a detailed account may be interesting to your readers.

Some days previously a short length of the Fleet sewer had fallen in, which had not affected the railway works; but on the 19th ult., between one and two p.m., a further fall took place; and, the crown of the sewer being crushed in for a considerable length, the flow of water through the sewer was completely stopped. About two p.m. the ground at the back of the wall was still in motion, the water rising up into it. At 2.30 p.m. I observed a slight crack in the coping of the retaining wall of the railway, about one-sixteenth of an inch wide (I may mention that the railway excavations are about 6 feet below the invert of the Fleet): at 2.45 p.m. this crack was one-eighth of an inch wide; and from that time the wall on one side of the crack began to settle down. The water of the Fleet was all this time heading up in the ground at the back of the wall (all made ground); and at 3 p.m. the bottom of the railway wall was seen to be in motion; for at a height of about one-third from the bottom of the wall horizontal cracks appeared in the counterforts (projecting 6 feet in front), gradually opening wider at the outside, and running to nothing at the back of the counterforts; the raking struts (of whole timbers) commenced to bend, and several fell broken in half. Four of the original timbers first placed to support the sides of the excavation, and which extended across the cutting (and were each formed of two whole timbers, bolted to a pile sunk in the ground about 5 feet), here commenced an extraordinary movement; for as the bottom of the wall moved outwards, the horizontal timbers were forced inan upward direction; and, working on the bolts, drew the four piles out of the ground; raising them 4 feet above it, and forming four king-post trusses without a tie-beam. They were suspended in this position above an hour. Some smaller struts, placed between the railway wall and the wall of the large vault (containing the bones collected from the old burial-ground when Victoria-street was formed), were forced against the vault; and one crushed the brickwork in and raised the coping-stone; but no bones were visible (dead bodies were reported as washed out). All this time, up to 4 o'clock, hardly any water had found its way into the railway works, though the water had risen from about 20 feet below the surface of Victoria-street to within about 8 feet. The houses at the bottom of Back-hill and Saffron-hill were flooded to nearly the ceilings of the basements, and the Fleet had overflowed into the vacant space on the opposite side to the railway. The railway-wall was all this time in motion, the upper two-thirds falling back on Victoria-street, and the bottom one-third moving outwards from the foundations, and pushing before it and raising into a singular shape the line of rails and sleepers over which an engine and truck had passed at two o'clock (reported as buried in the ruins in one account). A little after four o'clock p.m., at that portion of the railway-wall where the first fall of the Fleet had taken place, and in a vertical crack about 10 feet below the coping of the wall, a small stream of water and concrete poured out; then a brick or two came out, with more water; then suddenly several bricks flew out of the wall, followed by a regular torrent of water, which in about five minutes washed a huge gap in the wall down to the foundations; and the timbers fell in all directions, breaking up and dancing about like straws. The wall then subsided down into its final position, and the waters of the Fleet took possession of the railway-works, extending up the tunnel as far as Exmouth-street. Of the gas and water mains only one 7-inch gas-main in Victoria-street was broken; and a lamp-post quietly subsided down into the trench over the Fleet without the glass being broken, and remained in nearly a perpendicular position; showing how gradually the fall took place. A 16-inch water-main sank down in the trench over the Fleet, and was rendered useless. As it was apprehended that the ground would give way on the opposite side to Victoria-street, owing to the timbers supporting the sides of the excavation having fallen; the gas-mains therein were stopped with bladders, as a precaution against the escape of gas in the vicinity of the houses.

With regard to the permanent character of the Metropolitan Railway works, nothing could have better illustrated it than this accident; for the retaining wall, though quite new brickwork, held together in an extraordinary manner; the counterforts breaking up into large solid masses.

Considering all the facts connected with the accident, it is evident that the cause of the railway-wall falling was the hydrostatic pressure exerted at the back of the wall by the water of the Fleet, which forced the foundations outwards; and the ground at the back of the upper part of the wall having fallen into the Fleet, this portion, being deprived of its support, fell backwards. As regards the primary cause of the Fleet sewer falling in, it will be advisable not to give an opinion; as, from the correspondence published in the daily papers, it is evident that this matter will be discussed elsewhere.

To the best of my recollection, I have given an accurate account of the whole affair; having been on the spot upwards of six hours from the commencement of the accident. B. D. K.

THE WELL, CLERKENWELL.

FROM time to time we have mentioned with regret the removal of the mark which was placed to preserve the memory of the ancient spot from which this now vast and populous parish takes its name, and which has been associated with remarkable passages in the history of Old London. Some time since we gave an engraving which showed the ruinous condition of the premises covering the well; and reported that the site had been allowed to become a public nuisance; which even, under other circumstances, would have been discreditable to the parish.

The property belongs to the parish, and was left to it for a particular purpose: it was, however, let on a lease; and the person to whom the lease was granted has allowed it to fall into that state of wreck which we have represented.

Some years ago, certain worthy churchwardens of Clerkenwell placed a tablet here, on which was an interesting inscription, giving a brief historical account of the well. This altogether vanished from the view, and none seemed to know where it had been taken; but, from information which we have received, it seems that this tablet, which must be classed with the public monuments of the metropolis, was not long since in the possession of a well-known gentleman who is connected with the management of the parish.

At length a movement has been made in Clerkenwell for the restoration of the site of the well. It is mentioned that funds will be required to effect the desired restoration; and it is feared that, in the present depressed state of trade in this parish, they will not be forthcoming to a sufficient extent, either from the parish purse or from private subscriptions throughout the district. It is, therefore, proposed that the funds should be assisted by the subscriptions of persons who take an interest in those matters though resident in other parts.

It is most desirable to have the inscription connected with the Clerks' Well restored to its original position; and it is to a certain extent an object of interest to the whole of the metropolis; so that help might be expected from other districts. But the expense of the replacing of the inscription would not be very great, supposing that the person who has taken it away were to give it up; and the premises, which have been allowed to fall into decay, were rebuilt.

It might, however, be worth while to consider if something both useful and ornamental, in combination with the inscription concerning the well, could be erected here with advantage; a drinking fountain, for instance, with seats for the numerous wayfarers who pass this way to rest. Most of the houses at this corner of Clerkenwell-green are old and dilapidated, and will probably ere long be replaced by better-looking and more important buildings. Should some such design as this be brought forward, it is suggested that there would not be found much difficulty in obtaining assistance to enable the parish of Clerkenwell to meet the expense; and that probably, in such a case, the Corporation and the Drinking Fountain Association would contribute. It is to be hoped that those who have taken the matter in hand will not cease their exertions until they have achieved their purpose. We should not give up the landmarks of history.

DEVONPORT, STONEHOUSE, AND CORNWALL HOSPITAL.

THIS hospital is now in course of erection at the head of Newpassage-hill. The style of the building, which was designed by Mr. Alfred Norman, of Devonport, architect, is Italian in its general character. The edifice will comprise a centre block running north and south, and an eastern and western wing, to each of which are attached two square towers. The eastern wing will be devoted to the purposes of a Lock hospital. In the centre block, which, with the western wing, will be used as a general civil hospital, will be the dispensary, waiting-room for out-patients, medical officers' rooms, house-surgeon's quarters, matron's apartments, and committee-rooms. On the second floor will be two special wards for fourteen beds, and also male and female wards for diseases of the eye and ear. In the basement story, under the western wing, will be an accident or casualty ward, for eight beds, and a male and female ward, each for sixteen beds. The other stories of the wing are divided into wards, which are planned on the "pavilion" principle, and most of them 14 feet high; with windows, 10 feet high; so placed that two beds only shall be between each window. Care, it is said, has been bestowed on the arrangements for ventilation and warming the wards. At the end of each ward will be doors communicating with the towers at the angle, in which are the lavatories, bath-rooms, and closets. In the centre block are the kitchen offices, communicating with the stories above by means of a lift sufficiently large to enable a patient to be taken to the proper ward on a bed. The wash-houses and laundries are distinct buildings on the north side.

The main building, of which the *Devonport Independent* gives an engraving, is 200 feet long, and about 40 feet in height at the western wing. It will be faced externally with dressed limestone and granite.

The committee submitted the plans of the internal arrangements to Miss Nightingale for her approval, and valuable suggestions were made by her in reference to them.

The building was commenced in March last; the contract for the erection of the work having been taken by Messrs. Jenkins & Hallett, for 6,900*l*. The memorial stone has just been laid, with Masonic honours, by the Earl of Mount Edgcumbe, P.M., P.P.G.S.W. Those who joined in the procession numbered about 500.

THE LLANDUDNO JUNCTION RAILWAY STATION.

IN consequence of the increasing traffic to Llandudno, in North Wales, a new station has been erected at the junction of the Llandudno branch with the Chester and Holyhead Railway, near Conway. The style employed is Mixed Gothic. The passenger-station building is 150 feet long, and contains all the requisite waiting-rooms for ladies and gentlemen, both first and second class; and also a spacious and lofty general waiting-room and booking-office, which occupies the centre of the building. The telegraph office, porters' and lamp room, occupy the north end; and along the whole front is a spacious verandah, 20 feet wide, which is continued round the end and along the Llandudno line, by which means travellers may pass from one train to the other under cover. The front of the verandah is supported with ornamental cast-iron columns, brackets, and spandrel girders. On the side facing the Chester and Holyhead high road, the centre portion of the roof projects, to afford shelter for passengers alighting from vehicles. In continuation of the building is a carriage-shed and tank-house; and on the opposite side of the main line is a passenger-shed 150 feet by 35 feet, from under which the Llanwrst trains are to start.

The walling is all of Penmaenmaur stone uncoursed, and the dressings of Cefn stone. From the angular and varied shapes of the wall-stones, (none of which are large), the joints well defined with pointing, and the soft contrast between the light neutral blue of the walling and the rich yellow tone of the dressings, a very pleasing effect is gained, and the same style of work is likely to become general in that neighbourhood. The principal features in the composition of the front elevation are two ornamental gables, in which are placed niches having traceried heads supported by polished Anglesea marble shafts, and crowning the whole are two ornamental pinnacles.

A medallion panelled gablet, filled with floral ornament, forms a central feature in the composition, and unites with a deeply-cut dentilled cornice. The chimney-shafts are hexagonal, and of dressed stone, with deeply sunk moulded caps. Two traceried and panelled gablets surmount the cornice on the elevation facing the high road. The verandah-beams at the wall-end rest on shafts with carved bosses, and all the windows and doors have splayed and moulded dressings.

The sole contractors for the work were Messrs. Joseph Gibson, of Warrington. Mr. George Glaister, of Liverpool, executed the mason's work; Mr. Edw. Geflowski, the carving; and Mr. Joshua Hewitt, the plumbing and painting.

The whole of the works were carried out, in conjunction with the company's engineer, Mr. Hedworth Lee, by Mr. T. Mellard Reade, of Liverpool, architect.

CANADA MILITARY ASYLUM.

THE corner-stone of the Canada Military Asylum, Quebec, has been laid on the new site conceded to the institution by the Imperial Government, on the St. Lewis-road.

The building, which has been advanced to the first floor, was decorated with flags and evergreens.

The Lord Bishop of Quebec having offered up prayers and invoked the divine blessing on the undertaking, the president of the committee, Colonel Paynter, handed to Lord Frederick Paulet a collection of the current coins of Canada, which were inclosed in a small parchment bag. The president then desired the treasurer, Staff-Surgeon Blatherwick, to read aloud the parchment commemorative of the occasion. The building is being erected by Mr. Joseph Archer, from the designs and under the supervision of Messrs. Stent & Laver, architects of the Government buildings now in course of erection at Ottawa.

THE SOCIETY OF ARTS.

AT the recent examinations, his Royal Highness the Prince Consort's prize of 25 guineas was gained by John Gershom Greenhough, aged 19, Bradford Mechanics' Institute, merchant's clerk; who has obtained the following certificates:—

1859. Arithmetic—first-class certificate.
1860. English History—first-class certificate.
" Geography—first-class certificate.
1861. English Literature—first-class certificate.
1862. Algebra—first-class certificate.
" Geometry—first-class certificate (with first prize).

The first prize in Free-hand drawing, 5*l*., was awarded to Isaac Holloway, aged 22, Messrs. Chance's Library, Birmingham, glass painter; and the second prize, 3*l*., to Thomas William Camm, aged 23, Messrs. Chance's Library, Birmingham, draughtsman.

In geometrical drawing no prizes were awarded. Strange to say, no candidate obtained a first-class certificate in this branch.

By the report read at the annual meeting held on the 25th, it appears that finding that the decisions of her Majesty's Commissioners for the Exhibition relating to the juries provided only for the publication of their awards, but not for that of reports descriptive of the progress of industry since the Exhibition of 1851; and that the Commissioners do not contemplate the publication of any extended reports; the council have undertaken this work with the co-operation of her Majesty's Commissioners and the juries; and have placed the matter in charge of Dr. Lyon Playfair, the Special Commissioner of Juries. It is intended that the reports shall be published in royal octavo, to range with the one-volume Jury Reports of 1851.

The lease of the Society's house expires at Lady-day, 1867. There are thought to be many reasons in favour of the Society retaining its present situation, as being well adapted for carrying on its operations; and this totally irrespective of any interest which may accrue to the Society in the International Exhibition Buildings under the terms of the charter constituting the Royal Commissioners for the Exhibition of 1862. The council have therefore thought it right to accept a renewal of the lease of their premises in the Adelphi.

The council have awarded the following medals for papers read at the evening meetings:—

To Dr. F. Crace Calvert, F.R.S., for his paper "On Improvements and Progress in Dyeing and Calico-Printing since 1851." *The Society's Silver Medal.*

To E. C. C. Stanford, for his paper "On the Economic Uses of Seaweed." *The Society's Silver Medal.*

To James Morris, for his paper "On Mauritius: its Commercial and Social Bearings." *The Society's Silver Medal.*

Mr. William Tooke, F.R.S., the senior vice-president, was elected president pending the arrival of the time when his Royal Highness the Prince of Wales may probably be induced to accept the office.

COMPETITION.

Birmingham Exchange Buildings.—The following has been forwarded to us as a list of the competitors:— Messrs. Holmes, Cranston, and Thomason, all of Birmingham, premiated; and Mr. Robins, London, selected as fourth by the referee. Messrs. Martin, Chamberlain, Bateman, Bland, and Chatwin, of Birmingham; and Messrs. Hornblower, Edys & Johnson, of Birmingham, unable to complete their plans in time. Messrs. F. C. Clarke, T. W. Goodman, Medland & Maberly, of London; and Mr. Seckham, of Oxford.

IRISH BUILDING NOTES.

A NEW Protestant hall is in course of erection at Longford. The plan of the building is a rectangle, containing four apartments; viz., large hall or lecture theatre, 76 feet by 30 feet; porter's room, entrance-hall, and committee-room. There is a gallery in the large hall, with a staircase leading to it; off the staircase is the lecturer's room. The roof is supported by semicircular trusses resting on corbels; and the total height from the floor of hall to the crown of the semicircular rib is 37 feet. The front, which is two stories (24 feet) high and 38 feet long, is of Italian character. Mr. J. Bell is the architect; Mr. J. Mullins, contractor. The amount of contract is about 1,500*l*.

A new bank is about to be erected for the National Banking Company, adjacent to the Market-square at Castlerea, county Roscommon. The building consists of a main block and back addition. The main block contains a cash office, 26 feet by 24 feet, on the ground-floor; also a hall and stairs leading to dwelling apartments. The first-floor contains a drawing-room, 16 feet 6 inches by 20 feet; and two bed-rooms, 16 feet by 18 feet, and 16 feet 4 inches by 10 feet respectively. The main block is two stories high. The back addition, which is three stories high, contains, on the ground-floor, a strong-room, 9 feet by 6 feet; vouchers' room, 13 feet by 9 feet; kitchen, 18 feet by 16 feet 6 inches; and a small store and scullery. The first-floor contains dining-room, 22 feet by 17 feet; pantry, and servants' bed-room. The second-floor contains two bed-rooms, 14 feet by 14 feet, and 18 feet by 15 feet respectively; also w.-c. The style of the front is Italian, with doorways at either side; affording separate entrances to the public and private apartments. The total height of the main building from the ground to the eaves is 27 feet. Mr. P. Nulty, of Kells, is the contractor; Mr. F. Caldbeck, the architect. The amount of contract is about 2,000*l*.

The new Molyneux Church, Upper Leeson-street, Dublin, has been opened for divine service. The architect was Mr. Carroll, of Dublin, and Mr. Bolton was the builder. The building cost about 5,000*l*.

Extensive additions and improvements are about to be carried out at the glebe-house of Athleague, co. Roscommon, for the Rev. Fitzmaurice Hunt, under the superintendence of Mr. W. E. Martin, architect.

We understand a new glebe-house is about to be erected at Westport, co. Mayo, for the Rev. R. O'Callaghan, by the same architect.

THE ECCLESIOLOGICAL ASPECT OF THE INTERNATIONAL EXHIBITION AND THE ECCLESIOLOGICAL SOCIETY.

THE twenty-third anniversary meeting of this Society was held on Tuesday evening last, in the Lecture Theatre of the South Kensington Museum. The chair was occupied by Mr. Beresford Hope. Amongst those present were—Lord Lyttelton, Lord A. Compton, Sir S. R. Glynne, bart.; Hon. C. Lindsay, Chevalier C. de Borman, M. Guffens, M. Sweetz, Signor Salviati, M. Cuypers, Rev. Dr. Jebb, Rev. W. D. Morrise, Rev. P. Freeman, Rev. W. Scott, Rev. J. C. Jackson, Rev. S. Webb, Rev. H. L. Jenner, Rev. S. S. Greatheed, Rev. T. Helmore, Rev. H. W. White, Rev. W. H. C. Luke, Rev. H. J. Matthew, Rev. J. F. Russell, Rev. C. J. Segeyt, Rev. T. James. Messrs. J. L. Anderdon, G. M. Mills, R. E. E. Warburton, J. D. Chambers; G. G. Scott, R. A.; B. Ferrey, G. E. Street, E. W. Godwin, W. White, W. Slater, J. Skidmore, W. C. Luard, D. Brandon, W. H. J. Weale, F. Gambier Parry, J. F. France, G. R. Robson, N. W. Lavers, J. Barraud, H. Parnell, W. J. Hopkins, H. Webb, J. S. Forbes, W. Burges, T. B. Pearson, S. S. Teulon, W. M. Teulon, J. Clark, Digby Wyatt, J. Prichard, F. G. Lee, E. A. Fitzroy, W. Slater, &c.

The Chairman said that they were assembled for the purpose, in the first place, of transacting the usual business of their annual meeting. The Lecture Theatre in which they met had been made much more commodious since an anniversary meeting of the Society had been held in it, now three years ago. For the last two years they had assembled in the Architectural Gallery, in Conduit-street, where they had found snug quarters; but from circumstances to which he need not further allude, and the whole world living as it were centered in the South Kensington direction, whatever part of London might, under ordinary circumstances, be the best and most convenient, no doubt South Kensington was the place for all artistic gatherings during the summer of 1862, and accordingly they had come there. They had not only present on that occasion members of the Society and other English friends, but they were favoured with the presence of some distinguished foreigners who took an interest in the progress of ecclesiology. The committee had within the last few days elected the following five honorary members whom the great International Exhibition had attracted to London;—M. Cuypers, of Ruremond; Signor Castellani, of Rome; Professor Eitelberger von Eitelberg, of Vienna; M. Du Sommerard, Director of the Hôtel de Cluny; and Dr. Salviati, of Venice,—all distinguished ecclesiologists. On ordinary occasions, at the annual meetings, the report having been read, a debate usually ensued upon topics adverted to in it; and after a discursive conversation on ecclesiology growing out of the report, the subjects for debate were proceeded with; for they had got out of the stereotyped system of reading papers, and had approached nearer to that of open-air preaching. On that evening, however, the subject for debate was the ecclesiological aspect of the International Exhibition, and of the exhibition on loan of fine arts at the South Kensington Museum. Either of those subjects would require many evenings in order to be dealt with as they deserved; and they should, therefore, be merely touched upon on that occasion. The whole ecclesiology of the past year might be said to be concentrated in one department of the Exhibition; and, when the report had been read and adopted, he would be glad to hear such observations on the subject as any gentleman present might think proper to make. He had only now to advert—and he did so with sincere regret—to the absence caused by indisposition of the Archdeacon of Bristol, who had presided over them for twenty-five years, and whose presence amongst them they had always hailed with the utmost pleasure. At no meeting could the present state of his health be mentioned without exciting the deep sympathy of every member and friend of the society.

The Rev. Benjamin Webb, hon. secretary, then read the Annual Report, to which we may return.

Lord Lyttelton moved that the report be adopted.

The Rev. P. Freeman seconded the motion. He confessed, that considering the advanced stage which ecclesiology had reached, he had but a slender acquaintance with it. Many years ago he was for a short time chairman of committees; but for the last 20 years he had not taken an active part in the proceedings of the society; and he could not but be struck with the rapid strides it had made during that period. Then he could have taken a fair part in their debates, but now he found that he was fallen into lee-way. The variety of subjects it embraced, the extent of area it covered, and the amount and utility of the work it proposed to itself, were perfectly astounding. That which he had left a babe he now found a giant. The occasion of the great International Exhibition had brought out this fact very strongly;—that there was scarcely a part of the civilized world which had not heard of the old Cambridge Camden, now the Ecclesiological Society. He congratulated the society upon the work it was doing, and the country upon possessing so valuable a society. When they looked back to Mediæval times they saw how artists worked, not only with the hand but with the head: hand and head went together: that which they pursued was not merely an art, but also a science. It was of the utmost importance that there should be at the head of ecclesiology a society like this, which would watch and take care that that noble religious science was not deteriorated into a mere art or trade; but that its position and dignity as a science, and as a religious science, were vindicated and upheld; and that it carried out in brass, wood, stone, glass, and many other materials, that which Coleridge had spoken of in reference to stone alone—"The petrifaction of our religion."

The motion for the adoption of the report was then put, and carried unanimously. After which the Treasurer, the Rev. Samuel Stephenson Greatheed, read an abstract of the accounts for the past year, which was adopted. Lord Lyttelton was then appointed one of the vice-presidents of the society; and the "House District Committee" and auditors were appointed.

The Chairman then said that, having disposed of the formal business of the meeting, he would briefly advert to the subject of debate, namely,—the ecclesiological aspect of the great International Exhibition, and of the works of art on loan now exhibiting at the South Kensington Museum. The subjects were so extensive that either of them would require a session for their full debate as long as the Parliamentary session. Time would, however, now only admit of a cursory glance at them. He would, therefore, direct their attention to a few points of view in the tangled forest into which they had wandered. He entertained no doubt that in the course of time the Great Exhibition would be of infinite value to the world. It helped to shed light upon the progress which science had made, and in some degree to show to each nation that which it lacked, and in which others excelled. The result would, however, be a work of time. Before they struck out a philosophy, they should have a glossary made out. Any one who visited the Exhibition must have noticed an infinite number of points, many of which were entirely new to him. If members and friends of the society brought under their notice the various points which had so struck them, and which they thought deserving of praise or of blame, they would by that means collect together a multitude of valuable facts for future study which would in the end enable the society to contribute to the development of that ecclesiological art in which they had faith, because it was modern and progressive. To be sure, they were of the Mediæval period, and their Court was the Mediæval Court. But why was that so? Because they believed there were many facts appertaining to Mediæval art which made it the best and most serviceable for the nineteenth century,—the art, in short, which was most suited to the wants of the present generation. They greatly respected archæology: they gladly studied antiquities; but they did so supremely and entirely with a view to the wants of the present age, and with a view also to the ages to come, which would be dependent very much upon the practical results which in this day are attained. That he considered to be the very keystone of the system,—that which made the society a living power in the age in which their lot was cast. He would now mention a few ideas which had occurred to him as he wandered up and down the mazy avenues of the Exhibition. He would begin with architecture pure and simple. In the presence of their foreign friends, he would only say, in reference to the Architectural Gallery, that he was extremely sorry the short time given by her Majesty's Commissioners to get the Exhibition together, the absurdity of their directions, and the little appreciation they showed of the value of architecture,—all these things had conspired to frustrate any collective exhibition of illustrations of architecture on the Continent. There were several very meritorious designs from Germany and Holland, but none at all from France. With one exception, France had sent nothing but restorations. The colonies of the country had sent numerous photographs. He alluded particularly to those from Sydney and Montreal. He did not criticise the buildings. They were very much what would be seen in villages and country towns in England, built by the architect of the place. There was very little ecclesiology, if he excepted two churches from New South Wales, of which those who forwarded them were justly proud, when it was considered that they were erected soon after the starting time of a struggling community. Several of the gentlemen present met under the wing of the Institute of British Architects, for the purpose of having the Exhibition as perfect as under the circumstances was possible. Mr. Waring was one of them: he worked heartily and well, and with his assistance they obtained from the Commissioners four galleries,—two with two walls each, and two with one wall. In these galleries there was an interesting and important exhibition of the architecture of England for the last twenty years. There were many hundred drawings well worthy of close and minute inspection: Gothic and Classic would be found ranged face to face—not in hostile, but in friendly opposition. Outside there were some mixed specimens of Scotch architecture which everybody should see. An opportunity such as was afforded by the existence of these galleries might not occur for many years; and altogether, it was a most interesting and important branch of the Exhibition. Good, bad, and indifferent specimens of both Gothic and Classic were to be found there; but, having studied them, they would go away well satisfied with the advance which architecture had made in this country. As he had said, foreign architecture—not from any fault of foreign countries, the fault was nearer home—was very slightly represented. There were, however, a few designs which would amply repay inspection. There was an elaborate design in Late German Gothic—later than we should like in England—but still a very careful and able study, by Mr. Schmidt, for the Town-hall at Berlin. Drawings of Mr. Fristill's Church at Vienna, and of a Romanesque church for the city of Prague, will also be found very interesting. There was also a church, on a large scale, for Amsterdam, by Mr. Cuypers, in which the double triforium is introduced, for congregational purposes. He (Mr. Beresford Hope) considered it a curious fact, that some time since, in a work he published, he had suggested that the double triforium could be used for such a purpose. Ecclesiological art was illustrated in the Mediæval Court. There the Society were hosts, and it was neither manners nor morals to talk over their guests. They were delighted at having the opportunity of opening it; and they were satisfied with it, as they considered it an honour and a credit to their movement. He would content himself with thanking the contributors, and acknowledging the obligation the Society was under to Mr. Burges and to Mr. Slater for the generous and ungrudging labour they had bestowed upon the court. The Architectural Objects Court had been alluded to in the report. It was, in fact, an off-shoot of the Architectural Gallery up stairs. Near it stood a grand metallic screen, which those who wished to realize the growth of Mediæval art, and could remember the Exhibition of 1851, would do well to study. The screen was alluded to in the report: he did not criticise it: there were some points in it which some would object to: there were many points which all must admire. One feature of it he desired to draw particular attention to, namely, the introduction of electrotype statues. Electrotyping, in the hands of good designers, would, he believed, work a most beneficial revolution in architecture. Cast statues were difficult to procure, and very costly; but electrotyping would enable the artist to realize the result of his own skill. The tiles exhibited by Mr. Minton were also deserving of notice, as were likewise the designs for external decoration, in which he recognized the germ of future development, and which had this great advantage, that the rain would wash off them the London soot. The chairman, having alluded to various objects of art contributed by foreign exhibitors, went on to say that the portions of the Exhibition to which he referred contained many objects which were not Gothic, but with which they would all be delighted. What was the lesson they were to draw from that? That they were abandoning their principles? That they were going to sea without having a haven to look forward to? By no means. They were taught to recognize this great truth, that art is one; which there was an ideal, if they could attain to it, that comprehended all. New ideas could be gathered from every school of art; while at the same time he believed theirs to be the most liberal and the best suited to meet the requirements of the age.

Mr. T. Gambier Parry having been called on, said that he came to the meeting to listen and to learn. With respect to the subject of ecclesiology, he had already written his ideas on it, at the request of the committee, and they were before the Society; and he would now listen with pleasure to what might be advanced by others.

Mr. Gilbert Scott was next called on. He said that, as yet, he had not visited the Exhibition sufficiently often to be able to offer any remarks on the subject before the meeting. Mr. Digby Wyatt would, no doubt, give them the benefit of his observation.

Mr. Digby Wyatt said that all who were interested in the progress of art in this country must be wonderfully struck with the enormous advance which had been made within the last ten years. He had heard foreigners express their astonishment at the changes that had taken place in that respect in this country during that period. Arts which in 1851 had scarcely made each other's acquaintance, now went hand in hand together. It was also a happy sign of progress to hear the president state that something could and ought to be learned from every school. In every style, in fact, there was some element which it would be most desirable to attain a knowledge of—some excellence which is worthy of true appreciation; and it was an evidence of real progress that that principle had been recognized at the meeting. In every department the advance made was very great. In enamel, in glass, and metal-work, the change was very extraordinary. With respect to an observation made by the chairman, the Mediæval form might be the best for the present generation. To a certain extent he was prepared to agree with those who held that opinion. The history of Mediæval art showed that there had been continual change in it. Collateral assistance was always made available: improvements were not considered innovations; and he believed that, by the adoption of the same principle, a style would at length be formed which would be worthy of being called National. There was strength in union: in some of the changes which were taking place some advancing phase would be found: the artist's mind was fed by engravings, photographs, casts,—everything that showed what was now doing, or what had been done in former times. There was, happily, a principle of assimilation in the artist's brain; and it was by cultivating it, and taking honey from every flower, that they would attain to a national style. He considered that the arts of this country gained immensely from that sort of union which the Society exhibited and encouraged.

Mr. Weale (of the Belgian Commission) said that, on returning to England after an absence of nine years, he was amazed and delighted at the progress which had been made. Formerly, artists were copiers; now he found an immense number of really original designs ably reasoned out. He attributed the improvement which had taken place in a great measure to the fact that English students went forth to foreign countries more than the students of any other country. In France there was a much more slavish imitation of the thirteenth and fourteenth centuries than in England. There the mind is thrown into the work; the head goes with the hand, as had been stated; and the wants of the nineteenth century were more attended to. He was convinced that the Mediæval was the style best suited to the present age; and, if England worked it out, the victory of the Gothic was certain.

Mr. Street said he hoped their foreign friends would not confine themselves to the Architectural Gallery with a view to inform themselves of the condition of English architecture, but would also visit the public buildings. The designs in the courts gave very little idea of what a building was when carried out in all its parts. With respect to the Exhibition, he did not think that either English or foreign exhibitors had made much progress since 1851. It was an unfortunate circumstance that the gentlemen to whom the arrangement had been intrusted did not seem to know what stained glass was. One reason for the little progress that had been made he believed to be, that the manufacture of stained glass was in the hands of a few. He congratulated the meeting upon the view expressed by the chairman, which had been alluded to by Mr. Wyatt. There was a catholicity in art; and if that fact was appreciated, and that which was excellent in each school acquired, it would lead to the development of art to which they all anxiously looked forward.

Mr. Burges also remarked on the little progress that had been made in stained glass, and the injudicious arrangement of the specimens exhibited.

After a few words from Dr. Salviati,

Mr. Skidmore said he thought the directors of the museum were entitled to the thanks of the Society for bringing together the Fine Arts collection, which they had all inspected with so much pleasure.

The Chairman said that they were all most thankful to Mr. Robinson, and those who had aided him, in bringing together, with so much labour, so splendid a collection.

The proceedings then terminated.

SCENE PAINTING.

Mr. FOUCAULT, optician, is at present engaged at the Palais de l'Industrie, Paris, in a series of experiments for improving the art of scenic decoration. Under the present system a back-scene and a certain number of side-scenes constitute an *ensemble* representing a landscape, forest, garden, &c.; requiring on the part of the spectator a good deal of imagination and good nature to induce him to admit the truth of the representation. According to French papers, Mr. Foucault proceeds on another plan. Instead of the traditional side-scenes representing old trees or rocks, and intended to limit the extent of the back-scene; instead, also, of the strips of canvas used to suggest air and clouds; he employs a large canvas surface representing a panoramic view of the sky, the end of which is not perceptible in any direction, either from the side-boxes or orchestra. All side-scenes are done away with, and the landscape thus acquires its fullest effect. One of his scenes represents, for instance, a view of the Desert of Sahara. Here, as far as the eye can reach, we see nothing but an interminable plain of sand bounded by the sky; and, to render the contrast more striking, a date-tree and plants of aloes decorate the centre of the scene; while, according to the old system, these plants would have had their place assigned to them right and left. Nor are Mr. Foucault's skies invariable. He makes clouds float about at pleasure; masses them together for a storm; and dissolves them for the return of fair weather with the greatest ease.

Something of the same sort has been done before now by Mr. Beverley. The ruggedness of the scenery at the sides, and the inartificial arrangement of skies, often presented in our theatres, are very discreditable, and might be obviated by a little thought. Perhaps the mention that some improvement (it may not be much) is being attempted in Paris may lead some of our managers, with whom it rests as much as with the artists, to give attention to the matter.

NEW BUILDINGS IN OXFORD.

OXFORD ARCHITECTURAL SOCIETY.

AT the annual meeting of this society, Mr. E. A. Freeman, M.A., gave a lecture on "The New Buildings in Oxford." According to the *Oxford Herald*, he said,—"The two subjects of architecture and history were intimately connected, and either was imperfect without the other. They did not know the history of bygone ages unless they were conversant with the styles of architecture accepted from one period to another, through successive generations. Architecture was, beyond question, an essential fact in the history of any people. The great thing he wished them to understand was that the study of architecture could only be pursued with advantage by those who duly considered it in its historical bearings. The study of architecture without its historical bearings was truly frightful in its results. Upon the present occasion there was one thing he missed:—their old friends the casts and brasses were all gone. They were probably in some cellar or garret; but he hoped the University would open its eyes to the fact that they were of as much value as many of the things they had got together in the Museum: the one illustrated the history of man, the other the history of matter. He had heard it said that casts were of no use as soon as photography was invented. He made a study of putting down all the foolish things he heard, and that was one of them. He thought the man who made use of the observation did not know what a cast or a photograph was. Photography was a most wonderful thing, and served many architectural purposes better than any other mode; but it was no deterioration of that to say that it could not answer the same purposes as the casts themselves. The cast was the cast, and nothing else. They could look at it on the left and on the right, and inspect its mouldings to advantage; but a photograph they could only look at from one place. The speaker then proceeded with the main subject of his lecture; having reference to the new buildings of Oxford; and began with a period of twenty-one years ago. He was sorry to say that, during that time, architecture had not only not gone forward, but back; and he had no hesitation in saying that most of the new buildings were constructed with worse taste than when he first came to the University, twenty-one years ago. In some of the old buildings he might find peculiar faults; but they were built on a good honest principle,—that of following the general architecture of the country. The modern fantastical vagaries of the present time were not then heard of. Look at the Martyrs Memorial. That was a thoroughly beautiful thing, with some of the most glorious Mediæval work known. Look at the new part of Magdalen Church: the windows, tracery, and some other portions were as good as could be; but when they looked into the building, they found the roof was ready to break down. It was not purely modern architecture, but of the Early English style. Of the Taylor Buildings, the least said the better. Then, as to Magdalen College Schools, the Pointed gable, the turret, and the porch, did not correspond with the other parts of the building; but, although he might find fault, he was not disposed to do so. He was satisfied to see a good piece of honest, useful, English work. Next, he came to St. George's Church, in George-street. The roof might be improved; but the whole building was a good piece of straightforwardness. He then referred to Balliol College Chapel; complaining that its erection was an injury to Trinity-College men, as it deprived them of a view of the exquisite beauty of the old chapel. The thing stood out with a great staring strong roof, and a most awkward thing upon it. He did not know what to call it, and it was for the architect to find a name for it, and not for him; but there it was. Then as to the buttresses: they were something between a buttress and a pinnacle, such as they might suppose were made when buttresses were first invented. On either side of the east window was something Burton had put up; but he (Mr. Freeman) did not know the name of it: it seemed to him as if the architect was trying to invent a new Grecian order. The speaker referred to the reading-room of the Union: it looked as pretty as could be in the summer; but in the winter there was no window at all; whereas with good straightforward Perpendicular mullions the effect would have been the same all the year round. Then as to the new Museum: the front was a very beautiful thing indeed: they had nothing like it in the University; but the architect reminded him of the Irishman with his gun, which could not shoot round the corner; for the architect had stuck on two pieces which seemed to have nothing to do with the building. The sides and the front were not worked together; but when he got inside the building it was another thing, as a cloister ran uniquely round it. After all, the building was not so outrageous as some; but it was not a good working out of the honest English style. Altogether it had many merits, and so with Balliol. But, said the lecturer, there is one place I can have no mercy upon whatever: that is the new church in the parish of St. Giles. It was as if they were to take the shoulders of a very weak ill-proportioned fellow, and then those of a strong burly fellow, and stick the two together; and then, because they would not join properly, to beat in the ribs of the big one to make them join. This was exactly what Mr. Street had done at that church. When he (the speaker) got inside the building, he found as much to complain of. Because he wished to do all justice he could, he must speak of the restoration of the Cathedral. It reflected the greatest credit upon all; giving the best effects possible under the circumstances. The speaker concluded with a eulogy of Mr. Scott, with especial reference to Exeter College Chapel. He considered they had not many such buildings in England; and no college chapel was built in such a splendid style. The only fault he could find was, that Mr. Scott had run off into the partly Transitional style, which was purely French and passed off for Italian. The speaker concluded by expressing a hope that some contemplated alterations at Merton and other colleges might not be carried into effect.

Captain Burrows, at the conclusion, said he would not attempt to enter into a detailed notice of Mr. Freeman's remarks, as the president discouraged discussion. He would, however, observe that on such matters as these there might at least be a difference of opinion; and that it was quite conceivable that another competent judge might travel over the very ground that had been gone

over to-day and give a totally different report of it. As regarded the Church of SS. Philip and James, he thought it could scarcely be fairly criticised before it was finished; and, until the spire was added, they could not judge of the general effect of the exterior outline of the whole building.

THE THAMES EMBANKMENT BILL.

A BLUE book of 360 pages has been issued, containing the evidence heard before the select committee on the above Bill, together with their brief report. The committee state that they have amended the preamble; that the estimates of the works are in their opinion sufficient; that they have agreed to report the evidence to the House; and that they have gone through the Bill and made amendments. Amongst the witnesses examined were — The Lord Mayor, Sir R. Mayne, Mr. D. W. Harvey, Mr. J. M'Lean, Mr. Bazalgette, Mr. Bidder, Captain Galton, the Duke of Buccleuch, Mr. Tite, M.P., Viscount Gage, Mr. Horsman, M.P., Mr. Hawkesley, &c. The Bill, as altered by the select committee, now authorizes, besides the embankment itself, approach roads from Surrey-street, Norfolk-street, and Arundel-street; a street from Wellington-street, Strand, to join the embankment at Hungerford-bridge (but this is not to be made until all the other works are completed); a new street from this last street to commence near George-street, Adelphi, and to terminate in Whitehall-place; and, lastly, a new street from the embankment at Whitehall-stairs to the Horse Guards. This clause then follows:—"And whereas it is expedient to afford time for the further consideration of the best means of relieving the thoroughfares of the metropolis in connexion with the proposed embankment; therefore it shall not be lawful for the Board of Works to lay down any roadway on that part of the proposed embankment which is situate between Whitehall-stairs and Westminster-bridge;—provided always that nothing herein contained shall be held to prevent the construction for the use of the public of a footway or terrace of a width not less than 80 feet along the river frontage of the last-mentioned portion of the embankment."

So strong an opinion prevails out of doors as to the course pursued by the Duke of Buccleuch, and the concession that has been most unwisely made to him by the committee, that we have every reason to hope that the House of Commons will give power to continue the embankment to Westminster-bridge.

Mr. Locke has given notice that, in committee on the Thames Embankment Bill, he will move to leave out the clause providing that a footway only be made between Whitehall-stairs and Westminster-bridge.

THE ARCHITECTURAL ASSOCIATION IN WESTMINSTER ABBEY.

ON Saturday afternoon at three o'clock a large gathering of the members of the Architectural Association took place in the Cloisters at Westminster, where they were met by Mr. G. G. Scott, who had kindly undertaken to conduct them over and explain to them some of the most interesting parts of the Abbey. He began, with the help of a large ground-plan, by pointing out the dates of the different parts, and then led his audience into the earliest of the existing buildings,—namely, the arcade or cloister, under the south end of the present library, which is now used as a covered playground for the Westminster boys. After spending some time here, the party went on through the Little Cloisters to examine the remains of the chapel of St. Catharine (formerly the chapel of the Infirmary) and part of the hall of the Infirmarer's house, still standing. Passing back through the Cloisters, they were next admitted into the library, which was formerly the monks' dormitory, although bearing few traces of its original use, except the doorway leading into the Abbey. Here some time was spent in examining some exquisite missals, *temp.* Henry III. Mr. Scott now led his audience back to the Cloisters; and after some conversation an ascent was made to the triforium, where much was to be asked, explained, and commented on. Here, in making the circuit of the east end, the peculiar method adopted in setting out the sides of the apse with the surrounding chapels was noted. Then up again still higher, till the roofs were gained. Here, during a short examination of the roof of the south transept and the back of the vaulting, a member asked the thickness of the filling in; when Mr. Poole, the Abbey mason, produced a complete stone of the original filling in, which proved to be about 9 inches in thickness, worked into a regular voussoir, with a winding intrados. Mr. Scott said that he could identify the stone as a particular kind of chalk, only found in one part of Surrey, and remarkable for beautiful greyish veins, which almost give it the appearance of marble.

A long descent now followed to the very lowest point of the Abbey, the crypt below the Chapter-house. Here the extraordinary thickness of the walls (17 feet 6 inches) was pointed out and conjecturally explained; and the curious receptacles hollowed out of the central shaft excited much attention and curiosity. By this time the crowd of casual visitors who had been thronging the Abbey during the day had all disappeared; and the party ascended into the south transept to find the whole Abbey in their undisputed possession. A short time was spent in the chapel of Saint Blaise, with its beautiful bit of sexpartite groining and its curious mural painting; and attention was directed to the bridge of communication between the dormitory and the Abbey, at the west end of this chapel. Passing into the choir, the pavement within the altar rails was next examined and explained. Then through the screen to the shrine of Edward the Confessor, with the history of its removal and clumsy re-edification, its mutilations and disfigurements; which, after all, have left it that wonderfully picturesque thing we could none of us wish to see altered now. Daylight was by this time beginning to fail; and, after a hasty look at a few other treasures, of which the chief were the retable in the south aisle, and the tomb of William de Valence, the party were reluctantly compelled to disperse soon after eight o'clock, thoroughly delighted with their visit and the kind and hearty manner with which Mr. Scott gave them the benefit of his learning and experience, and answered the numberless questions which were put to him.

It is greatly to be hoped that the success of this meeting may bring about others of a similar kind; and that it and all such meetings may kindle amongst many a real and lasting interest in old buildings, and induce them to *sketch! sketch! sketch!*

PROPOSED ARCHITECTURAL ALLIANCE.

A MEETING of gentlemen interested in the formation of an "architectural alliance" was held on Wednesday last, at the House of the Architectural Union Company, in Conduit-street.

The attendance was very limited, but delegates from several provincial architectural societies, including those of Bristol, Edinburgh, Liverpool, Glasgow, Manchester, and the Northern Architectural Association were present; also Mr. Blashill, the president of the Architectural Association of London.

Mr. Austin, of Newcastle, was called to the chair; and Mr. Pritchett, of Newcastle, acted as honorary secretary.

On the motion of Mr. Pritchett, a resolution was submitted that an architectural alliance be formed.

Some considerable discussion ensued with reference to the propriety of adopting, as the basis of such alliance, the outline of a scheme already circulated by the Northern Architectural Association.

An opportunity was afforded by a sitting of the council of the Royal Institute of British Architects in the same building for an interview on the subject, at which the delegates were courteously received, and explanations afforded as to the object which the promoters of the alliance have in view, namely, general harmony of action in reference to professional practice and charges, and a desire to raise the *status* of the profession.

Ultimately, a series of resolutions for the promotion of an architectural alliance was drawn up and approved. These are to be submitted to the several provincial and other bodies interested, for their consideration.

THE CHATHAM WATERWORKS.

THE new reservoir of the Brompton, Chatham, and Rochester Water Company is nearly completed. The bottom of the reservoir is the natural level of the ground. The building, according to the local *News*, consists of four retaining walls, forming a nearly square receptacle, capable of holding a million gallons of water. On two sides are buttresses of brickwork, to resist the great outward pressure of the water: the other sides, which are formed in curved lines, are tied together by arches running across the reservoir. There are ten of these series of arches; each series resting on ten pillars; these, with the abutments from the outward walls, giving eleven arches in each series, or 110 arches in all. The whole of the brickwork is laid in cement. The floor will be formed of three layers of bricks—two flat, and the centre layer placed edgeways; forming a floor a foot in depth; the whole imbedded in cement. This floor, the pillars, and the walls, will all be coated with a hard cement, which dries nearly white. The water forced up from the works at Luton, some 300 feet below this point, will enter by a 12-inch main near one corner of the reservoir; and the main for supplying the towns will be situate at another corner. Resting on the outward walls and on the series of arcades will be arches of brickwork, covering in the whole of the reservoir. Over these arches there will be a covering of earth: earth also will be thickly piled against the retaining walls; so that, when the work is completed, only a mound will be outwardly apparent.

The water has been already filtered by nature as it percolated through the thick chalk strata; and has, it is said, hardly a trace of organic impurity; so that no filtering-beds are required. The object of lifting it from Luton to Star Hill, and depositing it in the reservoir, is to get a quantity stored, and to obtain a pressure from elevation which will send a stream of water over the highest houses in Brompton, situate as that town is on a hill.

The contract for the reservoir was obtained by Mr. J. G. Naylar, of Rochester; the plans having been prepared by Mr. Pilbrow, the civil engineer of the Water Company.

In the valley, extensive operations have been going on for augmenting the storage space at the works, and for increasing the springs. Nearly 60 feet beneath the surface of the ground on which the engine-house stands, and of the yard surrounding the house, an extensive excavation has been made: galleries supported by brickwork arches have been formed in the chalk: these galleries are about 20 feet high. Besides providing a reservoir for storing the water as it rises from the deep artesian borings and central well, this excavation has added a number of new and copious springs; so that altogether a very large supply of water is now every hour provided at Luton.

PARIS.

ANOTHER pavilion (the ninth) is about to be erected for the Halles Centrales, the pillars and a portion of the framed roof being ready to put in place. To make room for this, the market of the Rue des Prouvaires is to be demolished, and the "tripiers" and the pork-shops therein removed to the ancient Halle aux Draps, which is being temporarily fitted up and turned into a market; windows are being broken out, and bays opened on the ground floor in several places, partitions removed, and the building consolidated.

A curious fountain, worthy of a place in our International Exhibition, is being erected in the Champs Elysées, before the eastern entrance. It is in granite from Laber and Kersanton (Finisterre), and is 6 mètres (19·7 feet) high from the base to the summit. It is composed of a square surbase with chamfered edges, a piedouche with a basin 3 mètres 40 centimètres (11 feet 2 inches) diameter; another piedouche and basin smaller than the lower one; and a pillar for the jet of water, also supporting a candelabrum brilliantly lighted. All this work was executed in the lathe; and some idea may be formed of the enormous labour when we affirm that the principal vase or dish was wrought by manual labour, applied to the steam lathe, out of a single block of granite, weighing 25,000 kilogrammes (about 24 tons 12 cwt.), transported by sea and land from Finisterre. The granite of which this fountain (unique in Europe) is entirely composed is identical with that of the block upon which the Luxor Obelisk stands in the Place de la Concorde.

The *Moniteur des Arts* announces that the Museum of the Louvre has just been enriched by a painting by Velasquez; it is a full-length portrait of Philip IV. of Spain. It cost 23,000 francs (920*l.*), and is placed near the Pouilleux of Murillo.

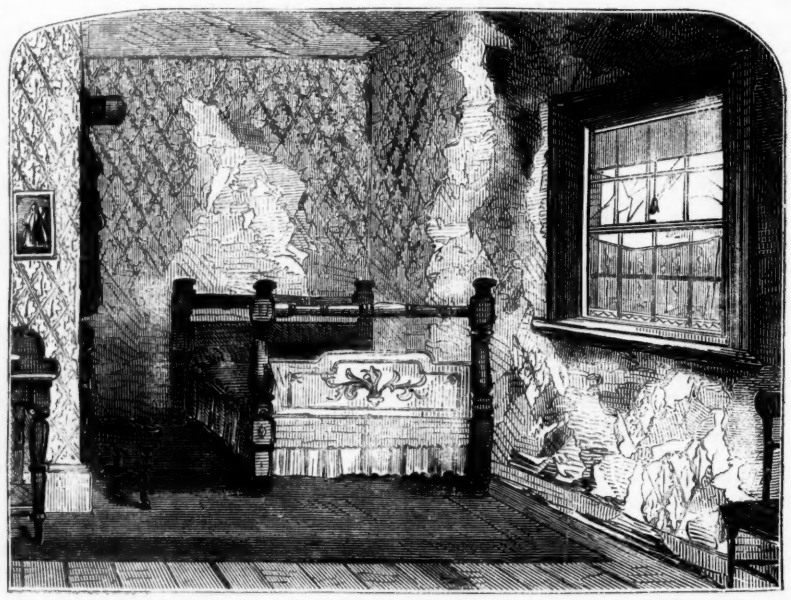
THE FIRES IN RUSSIA.—These political or revolutionary fires have been extending from St. Petersburg to the provinces. On the 16th May, 10 houses were burnt at Tiflis; on the 9th, 20 at Mohilew; and on the 11th, 44 houses, 133 shops, and the church at Czernichow. Fires have also taken place at Novgorod, but details are wanting; and also at Odessa. Those at Moscow we have already alluded to.

DAMP IN DWELLINGS.

KNOWING the damage which is often done to buildings by damp, and the serious danger to health which arises from this cause, it is extraordinary to find, in so many instances, how little care is taken effectually to drain the ground surrounding dwellings, and otherwise to keep them dry.

In the metropolitan suburbs, and in many places both in the town and country, there is especial reason for complaint in this respect. Pools of stagnant water are allowed to collect and remain during the winter months. The land becomes saturated with moisture, which is more or less absorbed by the porous brick walls of the houses; and still further mischief is done by the summer heat distributing the poisonous contents in vapour throughout the surrounding locality. No care is taken in putting in the foundations.

The injurious effects and great extent of the evil in cottage and other dwellings are generally not sufficiently considered. In hundreds of instances, notwithstanding that large fires are regularly kept burning, the interiors of rooms, even in houses occupied by persons of means and intelligence, are as moist as some caves: the paper peels off the walls: the plaster cracks and falls to pieces: the covers of books become mouldy and have a fusty smell: papers stored in cupboards; prints hanging against the walls; linen in drawers, if not constantly aired, soon perish. In mild, dull weather, streams of water run down the glass of the windows; and in frosty weather it is covered with icy crystals. At times the paint-work seems in a state of violent perspiration. In such houses, ironwork, both polished and of other kinds, gets rusty in a few hours. But these and other evils are nothing in comparison with the ill effect produced upon health. The cause of the illness, however, is usually looked for in another direction. In many cases the michief is caused by want of attention to the spouts and pipes, which get stopped or broken; and in rainy weather, streams of water fall upon the outer walls, and sink into the basement; for in many of the small dwellings which were built a few years ago—and in too many at present, as already mentioned—sufficient attention has not been paid to the foundations, and to the means of



A DAMP ROOM; AND ITS DANGERS.

carrying away the rain-water. Even if the spouts are in good condition, such is the nature of the building materials, and neglect of drainage, that the damp from the earth may be seen to rise to one row of bricks after another;—to a height of from 10 feet to 12 feet and upwards; and it is in such situations that many diseases, particularly among young children, are fostered or generated.

In parts of the City and closely-populated portions of the metropolitan districts, much mischief is caused by the overflow of cisterns: the ball-cock is taken off, or pipes are stopped or broken; and neighbours are surprised to find dampness showing through walls in the most inconvenient situations.

As regards damp houses, it is not always easy for inexperienced persons to detect them, particularly in the summer time. In order to catch a tenant the exterior is smartly done up; the little plot of flowers and plants looks pleasant; and in the inside every room is decked with the "sweetest" papering. In a short time, however, a change takes place; and in spite of care the colours and patterns fade and give the appearance of half a century's neglect.

The apartment which is shown in the engraving was carefully drawn on the spot. It is a room on the first floor of a house not far from the Regent's Canal, in Islington. Not nine months ago the wall-papering was renewed, and now it has almost perished, in one part, from the overflow of the spouts: ghastly forms have appeared in other parts; and from the ground the damp has risen up in the way we have endeavoured to illustrate.

Too much care cannot be taken to prevent the action of damp; and any necessary sum expended for this purpose will in the end be a saving. Damage is often done by the damp site on which buildings are placed; and yet at the present time we could point to new streets where the scavengers are depositing liquid sweepings, masses of decomposing animal and vegetable refuse, and other abominations; and upon this, presently, the walls of houses will be raised, without the slightest arrangement to keep down the moisture or prevent dangerous exhalations. Those who sleep in the basement of such a house suffer first and most.

CELLS, SANCTUMS, AND CRYPTS.

THE entrancement and seerism of the "holy hermit," in his cell, cave, or grotto, by night, mentioned in Fairholt's "Up the Nile," remind one of what is said of the Sibyl to whom Æneas was guided, as the *way* to "the Shades":—

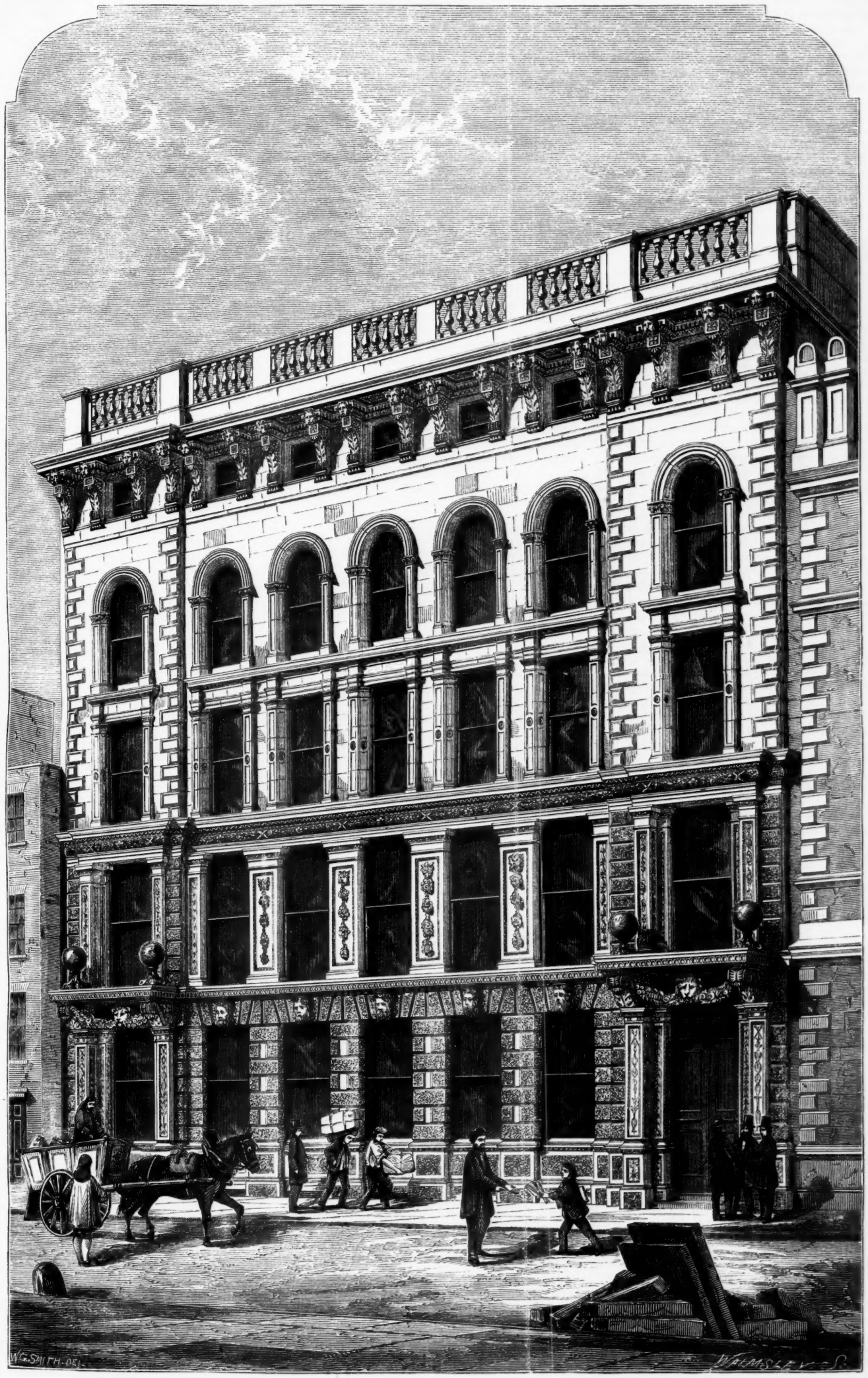
> "In a cave upon a rock, by night,
> Reclines the mad, prophetic Sibyl."

And it is a curious circumstance that at Cumæ, where Æneas was to find this cell, this Sibyl, and this *way* to the World of Spirits, a strange "City of the Dead," like that of Thebes and Beni-Hassan, has been found; as at Ur, too, or Hur, the Paradise of the Chaldee "daimons," or spirits; but with its tombs or apartments, like those of Beni-Hassan, and many others in Egypt,—including the inner chamber, cell, or "oratory" of the Great Pyramid, containing the sarcophagus and the elaborate and scientific ventilators,—"prepared *as if for the living* rather than for the really dead"; as we may well conceive the Sibyl's own cell or cave amongst those at Cumæ to have also been. And, as we have the Shades of the Sibyls at Cumæ, and the Hur of the Hurls* in Chaldea thus remarkably associated with "Cities of the Dead;" so, even in this country, and at the present day, we find a churchyard occasionally, as at Chichester Cathedral, called a "Paradise." The subject of cells is a very extensive and interesting one. The cell or adytum of a temple was the *sanctum sanctorum* in which "the god" was believed to come to his worshippers; and the manner of his coming may be inferred from many hints as to temples and cells: thus in the *sanctum* or cell of the temple on the top of the tower of Belus at Babylon, as Herodotus tells us, there was "an elegant bed," on which reposed a priestess, whom the god, Belus, or Baal, visited by night; and, in certain Egyptian "invocations of the god," he who "reposes on the beautiful couch" is indicated. The "arkite cells," kist vaens, or caers of the Druids, were places where mystical initiations took place. Thus the Taliesin was "made perfect" in the "narrow bed" of the mystic cell; and he says,—"Complete is my chair in caer sidi: neither disorder nor age will oppress him who is within it:" and again,—"I went the circuit: I slept in a hundred isles: through a hundred caers I toiled . . . A second time was I formed . . . I have died and have revived . . . I am now Taliesin." Of the Druidical "God of Mystery" it is said,—"Hu lived and died alternately;" so that this death of the Taliesin was doubtless that state of entrancement during which "the god" was believed to have "lived" in the body of the "departed soul," till the Taliesin again "revived" in the alternate *death* or departure of the god, or spirit of entrancement. In short, the cell was the *sanctum sanctorum* in which the god "appeared" *in* the entranced; who were believed to be "god possessed," and "dead to the flesh," while "quickened by the Spirit." In the temples of ancient Egypt there were dark chambers, or crypts, in which the sick were submitted to thaumaturgical treatment by the priest-physicians, in "the temple sleep" referred to by Iamblichus; and the prescriptions of the Egyptian Æsculapius,—or, in fact, "the god" or "spirit" who appeared in those who were entranced in this temple sleep,—were inscribed on the walls of the temple. The dark chambers discovered by Mr. Layard in the temples of ancient Nineveh were doubtless devoted to similar purposes; and Ezekiel probably refers to just such dark chambers or cells of the Israelites,—who were so prone to follow the practices of the heathen,—where he says,—"Then said he unto me, Son of man, hast thou seen what the ancients of the house of Israel do in the dark, every man in the chambers of his imagery?" Every man in the chambers of his imagery appears to be in the original a significant expression, implying that each occupied his own separate cell or chamber; and reminds one oddly of those "kings of the nations, even all of them," who "*lie in* GLORY [in the Spirit of Glory?] *every one in his own* HOUSE." As in some measure connected with this very curious subject, we may remark, that a recent American author describes an ancient temple in Central America, "under the altar" of which was a crypt, where it was said that those initiated into certain mysteries were placed; and into which dead bodies of human beings just presented on the altar as sacrifices were said to have been cast. Tomb-tops in the catacombs of Rome, we may here also remark, were used as altars by ancient Christians, who practised their religious rites, as well as buried their dead, in crypts and catacombs,—perhaps not altogether on account of persecution, as supposed; and crypts and caves or cells still exist under some Christian Churches just as they did under many heathen temples; and as the sepulchre of our Saviour does in the Church of the Holy Sepulchre at Jerusalem; once connected, too, as *it* was, with a garden or paradise.

* See leading article in *Builder* of 22nd August, 1857, on "The Mystic Chaldea."

LONDON STREET ARCHITECTURE.

THE erection of banks, commercial chambers, and insurance offices, in the city of London, is fast changing and improving the aspect of the streets. One of the most recent structures of the kind is that for the Ocean Marine Insurance Company, in Old Broad-street, as yet scarcely completed. We give a view of the front of this building: it is of stone, of considerable extent, and exhibits a large amount of carving very fairly executed. The architect is said to be too busy to afford any particulars; and the company is of so peculiar a character that, according to one of its officers, it does not desire publicity—in fact, is rather anxious than otherwise that insurances should not be offered to it. We wonder if the shareholders take the same view of the matter? Anyhow, the wished-for obscurity shall not be disturbed by us. We will simply add that the ground floor is the only part retained by the Insurance Company for their offices, and that the first and second floors are occupied by the Brazilian Bank, which has been recently formed. Mr. Little was the contractor.



LONDON STREET ARCHITECTURE: A MARINE INSURANCE OFFICE, IN OLD BROAD STREET.

LODGINGS OF THE POOR.

THIS subject, so frequently treated in the *Builder*, has attracted more serious attention since it has been taken up by the Social Science Congress; and the pictorial exhibition of overcrowded and pestiferous chambers, in your number of 14th of June, holds up to the view of well-housed Londoners the endurances and miseries of the operative classes. It is only the visitor of the poor in their dark and drear retirements who could hitherto have realized any idea of their actual condition. The pencil has here done the work; and introduces, as by magic, the innocents of the poor to the aristocratic and independent portion of the community.

It is above ten years since the writer treated the subject of model lodging-houses and the inadequacy of such buildings to meet the wants of 20,000 families huddled together throughout the metropolis in a state of utter barbarism and filth. These houses, so far as they go, are certainly a boon to many,—single persons especially; but the cost is too high for the artizan or working man with a family; 5s. or 6s. for a set of chambers being too great a sacrifice out of their weekly wages. Those moderately-comfortable foundations are, therefore, tenanted by parties who hardly need the sympathies of the benevolent or philanthropic.

The great social requirement of the day is *improvement in the dwellings of the poor who have families*. This point, so essential to the health, moral elevation, and comfort of the people, has hardly been touched on as yet. The munificent gift of Mr. Peabody would seem to offer a first step, from which to graduate an ascending scale.

Formerly, pious founders of almshouses left funds and estates, in trust, for parochial or private management by governors or committees; but all these have merged into charities or great public schools, *disposable* by private presentation or by force of corporate or vestry influence! Latterly, a nearer approach to the grand desideratum has been effected by the Bethnal-green Lodging-houses: still the real requirement is as remote as ever.

At least 200,000 souls are located throughout the extent of London, and in all its quarters, in the state so truly depicted in the *Builder*. This number is, however, only a fraction of the host which fills up the labouring complement of three millions of inhabitants.

The question is, What can be done to *cheapen*, to *improve*, and to *humanize* the abodes of so much misery? To repair at once or in a season these stupendous social defaults would be impossible; but to begin a system by which progressive amelioration should be surely effected is quite within the capabilities and means of this community. It is not because the great thoroughfares are palpably neglected, and that straits and barriers are suffered to incommode, stagnate, and degrade this metropolis, that nothing can be done in so mighty a work as the improvement of the dwellings of the poorer classes: it needs but a beginning in the right way; and such a sum as the gift of the good American banker, long our fellow-citizen, would suffice for the commencement as well as the proof.

Private companies have erected some of the model lodging-houses; and they pay a return of 7½ per cent.: others, again, are said to pay 3, 4, and 5 per cent. per annum. All these buildings are got up in a solid and plain style; but as yet the healthy, commodious, and cheap plan has not been realized: that plan ought to secure apartments for families,—not as a charity, but at a low rate; sufficiently remunerative to satisfy the capitalist; and adequately moderate, so as to secure the independent feelings of the occupants.

As before remarked by the writer, it would be impossible to obtain sites for entirely new buildings, even in the lowest of the crowded slums; but it would be perfectly easy to hire, or purchase at a premium, on long lease, the crazy tenements which are now let at rents varying from 30*l.* to 60*l.* a year; and improve, amend, repair, and adapt them for the accommodation of many families. Wherever practicable, two or more houses ought to be thrown into one, with a common staircase (inside, if necessary, or without where practicable), giving access to every suite; with the basements always arranged as kitchens, laundries, cellars, or even as evening schools (but never as sleeping-rooms),— a common parlour with fire being an indispensable accessory to the arrangement.

Wherever the walls would admit of it, one or more additional stories could be added; yielding, of course, additional rents; but those rents should in no instance exceed 1s. 6d. per week, whilst the charge for smaller rooms might be 1s.; the rule being always inflexible, that to every floor at least there be a water-closet, and to every set of rooms a larder and closet or presses.

When this scale of accommodation is proposed, the return for capital laid out cannot be computed at a rate exceeding 3½ per cent.; and it will be conceded that if such rental, as arising from the capital of 150,000*l.*, were funded and suffered to accumulate, and that such accumulation were laid out *decennially* after the same fashion; then, after the lapse of fifty years, the deodand might be increased by accumulation in additional buildings worth many times the original sum.

The peculiarities most prized by families occupying chambers in such houses are—1st, additional space; 2nd, cleanliness and comfort; 3rd, privacy of peculiar rooms and offices; 4th, the economy of a common kitchen, laundry, &c.; 5th, ventilation and warmth of the whole structure.

In very large houses, such as barracks, access by one internal staircase, and by corridors leading to several suites, are rather objectionable to families, who generally prefer external stairs and galleries: these always conduce to better ventilation, and more complete segregation; besides, that internal space, in so crowded an area as London, is rendered more available. To choose positions for building is not possible; therefore, in altering old houses, the most must be made of existing elevations; taking care that sewage be made perfect, with water-supply to every floor, each suite having a tank and sink within its inclosure; and dust-shoot for every floor, to convey the ashes to a common receptacle.

For a community of families thus formed a properly-systematized service of gas to the halls, chambers, and passages, will be an item of saving, while it gives increased warmth; and this, together with fuel for the common room or saloon, must prove an attraction towards forming a social community of feeling; added to which, the opportunity of clubbing together for the purveyance of food may be made a source of general profit.

The subject of warmth and ventilation has lately occupied much public attention; and in this particular, as regards the houses or rooms of the poor, as well as in large buildings, a greatly-improved system has been introduced by Mr. J. Newton; who, by a simple stove and ordinary fireplace, has found the means of heating and ventilating several apartments. This is done by taking in the atmospheric air at the lowest story, and transmitting a current, warmed to any desired degree, by ducts leading to other rooms.

Whatever the system used, ventilation is an object of primary importance in the abode of multitudes, as the recent reports on barracks fully demonstrate. The health, and consequent ability, of workmen, and most notably of children, greatly depend upon it.

It may be argued that the improvement of old houses, or the building of new, must be the subject of bargain and contract. So they certainly must. But if specifications be given by competent surveyors, and those formed upon plans and designs set out by parties ardent in the promotion of the great and benevolent object herein shadowed forth, there can be no room for extravagance nor undue expense; for competition is very active amongst builders of the day; and it is clear that there never was a time when utilitarian and solid buildings could be got up and finished so quickly, nor at so small a comparative cost.

Should it meet approval, accredited parties might receive subscriptions to establish a fund, to be applied as above indicated, to pay a dividend of 3½ per cent. only. When 10,000*l.* are collected, begin with that amount. Every establishment completed on that scale must soon be filled. As the new houses become tenanted at a cheaper rate, the old lairs must become deserted; so that the working man's rent will fall still lower, and the owners of those vile refuges will be compelled to repair and improve, as well as abate.

The plan suggested cannot be summarily carried out or generalized; but it is the only comprehensible mode of attacking and dealing with an acknowledged evil. Every new change or improvement pulls away the homes of workmen. They are forced to more distant localities, perhaps in or beyond the suburbs. All this not only reduces their vails, but violates the domesticity of the bread-gainers. The suggested plan, on the contrary, offers an accessible home near to their scenes of occupation; and the facilities for intercommunion by means of assembly or reading rooms, or schools, gives both the opportunity and inducement for humanized if not refined habits of thought and action.

In troublous times, strifes never proceeded from a happy, contented, or employed people. No: disaffection is rather the offspring of neglected penury, of disregarded complaint, and of suffering which might be alleviated by municipal care. The poor are conscious that privations are sometimes inevitable, and attach no blame to the higher orders on that account, for they are equally actuated by the better feelings of our common nature; and so benefits conferred by attention to their condition bring forth the best fruits.

As a happy home is the greatest blessing, so a filthy lair is the direst misfortune. By securing comforts to the working classes, they become healthy and contented; whilst, their industrial energies being reanimated and their habits refined, all classes profit, and the nation thrives.

QUONDAM.

PROVINCIAL NEWS.

Gravesend.—Alterations and repairs of the corporate buildings are in progress. A new staircase has been laid down to the Town-hall. The windows have been taken out of the hall, and will be replaced by plate glass. The ventilation of the justices'-room has been improved by the insertion of new ventilators. The fish-market is being converted into a storehouse for the police. The buildings generally are to be repainted, the police cells repaired, and the houses of the superintendent of police and the sergeant of mace are also to be repainted and repaired. The cost of these improvements will be about 500*l.*

Hertford.—We understand (says the *Herts Mercury*) that the Lords of the Treasury have given their assent to the whole of the corporation scheme for the extension and improvement of the water supply of the town of Hertford. Now that the matter has been so far settled, it is to be hoped that there will be an end to all differences on the subject; and that the corporation will have the sympathy and support of all classes of the inhabitants in carrying out their scheme.

Worcester.—In consequence of the earnest remonstrances of many antiquaries of high standing, one wall of the Guesten Hall (all the rest having been demolished) has been kept standing, till the Dean and Chapter shall decide at their next meeting what is to be done with it. This fragment contains some windows, with Decorated tracery. It has been a shameful act.

Gloucester.—The materials of St. Margaret's Hospital have been disposed of by auction. Mr. Clutterbuck, builder, became the purchaser, at 21*l.*, and the removal of the building has been commenced and has to be completed in a month. The site will form part of the gardens of the new almshouse.

Milford.—A large malthouse, including engine-house, boiler-house, and workmen's cottages, is now in the course of erection at Milford Junction, on the North-Eastern Railway line; it is one of the largest in the West Riding of Yorkshire. The proprietor is Mr. Wm. Naylor, of Leeds; the architect, Mr. John Child, also of Leeds; and under his directions the works are being carried out by his assistant, Mr. Stead.

Pontypridd.—The contracts for the waterworks have been let. Messrs. Thomas & Griffiths, the contractors of the Sirhowy Railway works, in Monmouthshire, have taken the works in connexion with the construction of the reservoir, filter-beds, laying the pipes, &c. The tender of Mr. Jordan, of Newport, has been accepted for the pipes, and that of Mr. Prodger, of Cardiff, for the house services. The reservoir works have been commenced.

East Retford.—Designs and plans for the new vicarage of East Retford have been prepared by Mr. A. Wilson and Mr. S. Dutton Walker, of Nottingham. The plans were selected by competition from six other sets sent in to the Rev. Arthur Brooke, the vicar; and are in compliance with the requirements of the Ecclesiastical Commissioners. The Decorated style has been adopted by the architects. The western front of the building looks into the garden and faces the church. The gables are finished with decorated wrought-iron work, which it is intended shall be painted in ultramarine, and gilt terminals or finials representing the ivy leaf. The apices of the gables will also be treated in a corresponding manner. The building is to be brick, with stone window facings and dressings, and the cost is not to exceed 1,000*l.*

Derby.—The Poor-Law offices, Derby, are situate in Becket-street, Wardwick. The exterior is built with pressed bricks and stone. The style of architecture adopted is Italian. The front is 50 feet wide and 35 feet in height, the centre being recessed: a wing is formed on either side. The

centre contains the principal entrance. The parapet is of open stone balustrading on stone cornice. The upper windows have pilasters with carved capitals and deeply-moulded circular architraves; also open balconies, supported on corbelled entablature. The whole facing to the lower part is of stone. The dressings to the lower windows, principal entrance, and angles, are vermiculated with rusticated joints; the several keystones being carved. The front is inclosed with iron palisading, with gates and stone piers. The design selected in competition has been carried out by Mr. Dusautoy, contractor, under the direction of the architects, Messrs. Giles & Brookhouse, of Derby.

Wakefield.—The new building for the Wakefield Church Institution, at the top of Westgate, has been formally inaugurated. The building comprises a reading-room, library, lecture-hall, and class-rooms.

Todmorden.— A new Masonic Hall has just been dedicated at Todmorden. The hall is a stone structure, erected between the Market-place and the railway station. The building is in the Italian style of architecture, and has cost nearly 2,000*l.* It has been erected by a Masonic company.

St. Boswell's.—Eildon Hall is at present undergoing extensive alteration and improvement, according to the *Border Advertiser*. The projected plan is in the old Scottish style. The foundation at present extends upwards of 400 feet. It is being laid with large stones from Twisel quarry. These average about 15 cwt. each, being 4 feet long by 9 inches thick. Mr. Laidlaw, of Hawick, is the contractor, and Mr. Scott Burn, of London, the architect of the building.

Auchencairn.—The *Dumfries Courier* states that a new mansion, to be called Auchencairn House, has been built upon the estate of Auchencairn, purchased a few years since by Mr. Ivie Mackie, who was thrice mayor of Manchester, and made a large fortune in England. The designs for the edifice were furnished by Mr. Corson, of Manchester, architect. The decorations were done by Mr. J. B. Bennett, of Glasgow.

Banff.—The Commissioners of Supply in Banffshire have resolved to proceed with the erection of additions to the present County Buildings in Banff, in terms of the report by the Government architect. At a recent meeting in Banff, Messrs. A. & W. Reid, Elgin, reported on two sites, which the commissioners have it on view to purchase, the one at the north end of the present buildings, and the other at the back. Both sites were reported eligible, and it was resolved that one or other should be purchased. So soon as the site is fixed upon, Messrs. Reid are to prepare the necessary plans.

SCHOOL-BUILDING NEWS.

Leigh (*Essex*). — The Rev. R. H. Herschell, minister of Trinity Chapel, Edgware-road, has erected a school-building in the fishing village of Leigh, which was opened for use on the 18th ult. The school, which is capable of accommodating between 300 and 400 children, is a plain brick edifice, erected from the designs of Messrs. Habershon & Pite, architects, at a cost of about 700*l.* It stands on the slope of a hill.

Bromyard.—The new national schools here have been opened. The designs were by Mr. T. R. Kempson, of Hereford, architect, and the contract for building was let to Mr. Joseph Turbill, of Bromyard, for 1,100*l.* The foundation-stone was laid in March, 1861. The walls are built of native stone, with Bath-stone dressings, and ornamental brickwork. The building is somewhat in the form of the letter H, with the boys' school in the centre, the girls' school to the right, and the house for the master and mistress to the left. The school-rooms are each about 41 feet by 16 feet, and there is also a class-room, about 16 feet by 15 feet.

Girlington (*Bradford*).—The corner-stone of a new Sunday school, about to be erected by the Wesleyan Methodists of the Bradford West Circuit, at Girlington, has been laid. The site adjoins Girlington-road, at the corner of a street leading, near the bottom, towards Whetley-lane. The plot of ground and land is sufficiently large to admit of the erection of a Wesleyan chapel at some future time. The building is being erected from the designs of Mr. Eli Milnes, architect. The school will be in the plain Italian style of architecture: it will have round-headed windows, and an open-timbered roof. There will be one school-room measuring 56 feet by 36 feet, and two class-rooms. The school-room will afford accommodation for 300 scholars. The estimated cost of the building, exclusive of fittings and the site, is 500*l.* The school site and the ground for the future chapel have been purchased for 200*l.* The contractors for the execution of the works are, Messrs. Isaac Verity & Co., masonry; Mr. J. Baxter, joiner's work; Mr. Schofield, plumber's work; Mr. Byrom, painting; Mr. Cordingley, plastering; and Messrs. Hill & Nelson, slating.

Swannington. — The new national schools at Swannington have been opened. These schools have been erected at a cost of 700*l.* The school-room is 39 feet 3 inches long by 18 feet wide: the class-room is 18 feet long by 12 feet wide, divided from the school-room by sliding-doors, so as to make one large room, in order that the whole may be suitable for divine worship. Accommodation is provided for about 108 children. The warming is effected by open fireplaces (one in the school and one in the class-room), and ventilation by means of a ventilator fixed at end of school next class-room, communicating with a foul-air chamber in roof of teacher's house, and one ventilator in chimney-breast of class-room, having a foul-air flue communicating therewith; fresh air being admitted from circular ventilators fixed in floor of school and class-room, connected with brick funnels communicating with sliding ventilators fixed in external wall of school and class-room. At the end of school, adjoining the class-room, is the teacher's house, consisting of a parlour, kitchen, scullery, with three bedrooms—one being over the class-room. The style adopted is Early English. Mr. S. W. Hallam was the builder; Mr. T. W. H. Miller, the architect.

CHURCH-BUILDING NEWS.

Wyrardisbury (*Bucks*).—The parish church of Wyrardisbury, or Wraysbury, has lately been restored; the chancel and the nave arcades being the only portions of the old edifice that have been retained. The north aisle has been rebuilt; the old doorway therein (the only object it possessed of antiquarian interest) having been copied. A new south aisle has been added. The nave, which was formerly covered with a plaster ceiling, is now, together with the north and south aisles, roofed over with open-timber roofs. The western gallery has been taken down, and the old west window opened. The church is now re-seated with plain open benches, and the passages and chancel have been repaved. The works have been carried out by Mr. Harley, of Slough, from the designs and under the superintendence of Mr. Raphael Brandon.

Winchester. — Scaffolding has been erected over the cathedral entrance from the Close, preparatory to repairing the window above it and removing the glass, in order that a memorial window may be placed in the opening to the memory of the late Rev. Canon Pretyman. A mural monument will ere long be placed in the south aisle of the chancel to the memory of the late Rev. Dr. Williams, of New College, Oxford, who was a canon of the cathedral. The monument will be placed against the tower pier. The steps and pavement at the west front are being proceeded with.

Birkenhead.—The Roman Catholic Church of "Our Lady of the Immaculate Conception" has been opened. The architect is Mr. Pugin, and the builder Mr. Yates, of Liverpool. The building is at present only partially completed, to meet the requirements of the present congregation; but, as it is expected that this will increase, it is intended, at some future time, to lengthen the east end by the addition of transepts. At present the church consists of a nave and two side aisles, confessionals, sacristy, and a gallery. The style is severe French Gothic. On each side of the nave are four arches, resting on pillars of Cork marble on a black Galway marble base. At right angles from these are other arches, which support the roof of the aisles. Each aisle is lighted by fifteen windows, in clusters of three; and there are on either side eleven clerestory windows, of ornamental design and cathedral-twisted glass. In the west end is a wheel-window; and there is also another smaller one at the east end, and two rose windows at the eastern extremities of the aisles. The roof of the nave is formed of beams and panels, tapering upwards. The building is supplied with a hot-water apparatus by Mr. Bennett, of Liverpool, and is at present capable of seating about 1,000 persons. The cast-iron supports for the seats were furnished by Mr. Rankin, of Liverpool.

Cheadle Hulme.—The chief stone of All Saints' Church, Cheadle Hulme, has been laid. The edifice is to be of stone, and will accommodate 300 persons. A provision for enlargement has been made. The plan consists of nave, chancel, south transept (the north being reserved for the extension), and vestry and organ-chamber to the north. The heating apparatus will be placed underneath the vestry. The extreme internal length is 75 feet 9 inches; width of nave, 25 feet 6 inches; and that of the church, 17 feet 2 inches. The height from floor of nave to top of ridge is 37 feet. The roof will be open timbered, and covered with Staffordshire tiles in two colours, arranged in geometrical patterns. Children will be seated in the transept, to which they will have access by a door in its west wall. The main entrance to the church will be by a door at the south-west, opening into a small porch, surmounted by a timber bell-turret. The contract has been taken at 1,200*l.* by Messrs. Thackrah & Peirce, of Stockport. The architect, from whose designs and under whose superintendence the work is being executed, is Mr. J. M. Taylor, of Manchester.

Stockport.—The Roman Catholic Church of St. Joseph has been opened for divine service. The church stands upon a site adjoining St. Joseph's Schools, erected three years ago, on the south side of High-street. The ground-plan consists of a nave and aisles, a sanctuary, with north and south lateral chapels, a vestry for the clergy, and one also for the choir men, with a room over it on the south side. At the western termination of the south aisle, foundations, 8 feet in thickness, have been prepared for the tower, which opens into the nave and aisles with lofty arches. It is intended hereafter to cover it with a vaulted ceiling, having a circular trap-door for the passage of the bells. The tower, with circular turret-stair on the angle and buttresses, is at present carried as high only as the base of the clerestory; but the intention is to surmount it with a spire, terminating, at a height of 200 feet, with a gilt orb and cross. The principal entrance to the church is in Tatton-street, in the centre of the western gable. The dimensions of the nave are;—Length, 100 feet; width, 30 feet; height to panelled ceiling, 60 feet; height to ridge, 72 feet. It is separated from the aisles by an arcade of five arches, supported by circular columns, having bases of polished Derbyshire marble, which form a contrast with the Yorkshire stone shafts. The aisles are 18 feet wide and 24 feet high; and are lighted by three and four light windows of Middle Pointed style. The clerestory is pierced by three-light windows, 13 feet high, of decorated tracery. The roof of the nave consists of arched ribs, moulded, and forming an open truss, the depth of which averages 6 feet. These arches are supported by hammer pieces, resting on columns, carried down to the base of the clerestory. The ceiling of the nave is divided into panels by moulded wood ribs; the panels being of plaster, inclosing the upper part of the roof, so as to form a chamber for ventilation. The arch which separates the apsidal chancel from the nave is of wood, moulded. The sanctuary is lighted by three geometric windows, 24 feet in height, the sills of which are 17 feet above the level of the predella in front of the altar. The area of the church is seated for 1,000 persons. The benches are open, stained and varnished. The alleys are laid with Yorkshire flagging; the space under the seats being boarded, the underside and the bearing timbers having been saturated with a preparation of creosote. The exterior of the church is built of Dunford Pierpoint stone, the tracery and ashlar facings being of Hollington freestone. The roofs are covered with Welsh slates. The church has been erected by contract from the designs and under the superintendence of the architect, Mr. M. E. Hadfield, of Sheffield. The whole has been carried out by Mr. J. Robinson, jun., of Hyde, the contractor; Mr. J. Dickinson acting as clerk of the works. The cost of the edifice is about 5,000*l.*, and the dome and spire will be 1,200*l.* more. There is an interior drawing of this church in the Palace of Art.

Bradford.—The consecration of St. Luke's Church has just taken place. This is one of the ten churches to be built in Bradford in five years: the churches previously consecrated being St. Philip's, Girlington; St. Stephen's, Bowling Old Lane; and St. Mary's, Laister Dyke. St. Thomas's, Cropper-lane, is nearly completed; and All Souls', at Little Horton, (at the sole expense of Mr. F. S. Powell), is in course of erection. St. Luke's is planted in the midst of a dense population at Broomfields, Wakefield Road, and has been erected by the Bradford Church Building Society, aided largely by churchmen in the district, and by grants from church societies. The church, which will accommodate about 700, is in Decorated Gothic; and built from the designs of Messrs. Mallinson & Healey, of Bradford. The cost of the building will be about 3,000*l.* exclusive of the land. The contractors were Messrs. Birkby & Healey.

STAINED GLASS.

Presbyterian Church, Islington.—The whole of the windows of the new Presbyterian church at Islington are to be fitted with stained glass. One of them is the gift of Mr. Alderman Lawrence. Mr. T. Chatfield Clarke is the architect; and Messrs. Heaton, Butler, & Bayne are the artists employed.

All Saints', Brixton.—The large west window of All Saints' Church, Brixton, has been completed. The subject is the "Te Deum." The central light is filled with the figure of our Saviour, crowned, and with groups of angels; while on either side are the figures of the prophets, apostles, and martyrs. Messrs. Heaton, Butler, & Bayne were the artists, who are to fill the other windows also with stained glass. Mr. T. Bury is the architect employed.

Thorpe Malsor Church, Northants.—A window has been recently placed in the little church of Thorpe Malsor. It is intended as a memorial of the late Hon. Caroline Eliza, wife of Mr. T. P. Maunsell. The four principal lights represent the Nativity, the Crucifixion, the Three Maries, and the Ascension. Above these are four smaller lights, which contain symbols of the four Evangelists. These are surmounted by two angels bearing scrolls, and by an emblematical representation of Christ in Glory. Underneath the window is a band formed of glazed encaustic tiles, on which is the inscription, in yellow and white letters, on a chocolate-coloured ground, edged with a yellow line, and bordered with green. The whole was designed and completed by Messrs. Ward & Hughes, of London.

Catesby Abbey Church, Northants.—The east window of this church has been filled with stained glass. In the centre openings are the figures of our Saviour and St. Mary; and in the side lights are the four Evangelists, under canopies, and upon pedestals, in which are introduced their emblems. Stained glass has also been placed in the north-side chancel window: it contains two subjects representing the Marriage Feast and Last Supper. The other windows have been releaded and surrounded with stained-glass borders. All these works were executed by Mr. Holland, of Warwick.

Bodicote Church (near Banbury).—A stained-glass memorial window has been placed in this church, containing the subjects of our Saviour raising to Life Jairus's Daughter, and the Acts of Charity; the tracery being filled with emblems and foliage. Also one smaller memorial window, containing the subject of Christ blessing Little Children. Both works were executed by Mr. W. Holland, of Warwick.

Aspley Guise Church.—For the last thirteen years (says the *Bedford Times*) the rector, the Rev. J. V. Moore, M.A., has been adding, year after year, one or more stained-glass windows, until the church now presents an unbroken series of painted and stained glass, the greatest portion of which are the works of Messrs. T. Baillie & Co., of London. In 1849, two three-light windows, with emblems on stained ornamental quarry backgrounds, were fixed up; in 1851 a memorial two-light window, with subjects, viz., "The Good Samaritan," and "Mary at the Feet of Jesus;" also three other memorial windows, each of three lights, in one of which are the figures of St. Matthew, St. Mark, and St. Luke; in another, St. Peter, St. Paul, and St. John the Baptist; and the third window contains three subjects, viz., "The Crucifixion, "Nativity," and "Entombment" of our Saviour. In 1851, also, a two-light window was placed in the vestry, representing "The Presentation of our Lord in the Temple." Also a three-light west window, with tracery lights,—"The Ascension of our Saviour" continued through the three openings: in the tracery are angels with scrolls, above which is our Lord seated. In 1854 a circular window was fixed, containing "Our Lord's Charge to St. Peter." In 1856 the east chancel window was erected. In the upper part of this window are represented "The Transfiguration," "Resurrection," and "Ascension of our Saviour:" and in the lower compartments, "The Last Supper;" the group continued through the three openings. Also a rose-window at the west front over the organ, in which King David is represented as seated, playing on the harp. A window, just fixed, viz., "The Adoration of the Magi," is dedicated to the memory of the late Prince Consort. In addition to these, the rev. gentleman has further embellished the clerestory windows, eight in number, with two lights in each, and each having a medallion in the centre, representing the emblems of the four Evangelists, "The Holy Lamb;" "The Dove," &c., &c.

Holy Trinity Church, Stratford-on-Avon.—The south-west window in this church has been filled with stained glass, the centre light containing the figure of our Saviour, and the side, ornamental geometrical patterns. Mr. Holland, of Warwick, was the artist.

SCHOOLS OF ART.

The Vauxhall School.—On Thursday evening, 26th June, the annual distribution of medals and prizes to numerous students of the Vauxhall School of Art took place at the Art School recently erected on a part of the old Vauxhall Gardens, and illustrated in our pages. The Rev. Robert Gregory presided; and, in presenting the medals and prizes, alluded to the advantages afforded by the school, both to the manufacturers and artisans of the neighbourhood; and congratulated the students upon having attained such success as to take twenty-eight medals out of thirty, which is the largest number allotted by the Department to any school. Mr. Edward T. Haynes received the national medallion for a drawing of foliage from nature. This drawing is now placed in the International Exhibition. Mr. James Dafforne afterwards delivered an address on the subject of "Art Education," which was highly appreciated by the company assembled. The thanks of the meeting were then given to the chairman, to Mr. Dafforne, and to Mr. Sparkes, the head-master of the school.

The Boston School.—The first exhibition of the works of the pupils, and distribution of prizes, took place recently at the school, which was thrown open for the inspection of visitors; and in the evening the prizes were distributed. The Mayor occupied the chair. Mr. W. Gane, hon. sec., read the report for the past year; and the master, Mr. V. Howard, then read over the list of prizes, which had been obtained by the students on an examination by the Government Inspector. Eight first-class medals were awarded by the inspector, and three of them have been forwarded to South Kensington for the national competition. There were nine prizes for second-grade examination. For the students in the various public schools where the art-master gives instruction, prizes were also awarded. The master then read a comparative statement, showing that Boston in the first year of its establishment had gained a larger number of medals, in proportion to the number of students, than any of the list of twelve schools mentioned. The Mayor presented the prizes, and addressed the students and the company upon the value of art, and its importance and influence upon the tastes of society; recommending a more diligent and careful study of it, as a source of relaxation, refined amusement, and elevating occupation.

The Leeds School.—Since the appointment of Mr. Walter Smith, this school is considered to have made considerable progress; and this year the good effects produced by the prizes offered by the borough members, the mayor, and others, have been evinced by the improvement of the competing works. The exhibition of students' works has just taken place, and is well spoken of by the local press. Eighteen first-class medals were awarded to drawings, of which ten have been sent to South Kensington for national competition. Of second medals seven, and of third medals four, besides other prizes, were awarded.

ALBERT MEMORIALS.

Barnstaple.—The foundation-stone of the Prince Albert memorial tower at Barnstaple has been laid. The tower (designed by Mr. R. D. Gould) will be 60 feet high. It is to have a four-dial clock and a drinking-fountain. The estimated cost is 400*l.*

Bristol.—It has been resolved that, inasmuch as subscribers to the extent of 182*l.* 16*s.* were in favour of a memorial window in the cathedral, a communication be made to the Dean and Chapter or the Restoration Committee to the effect that, provided a sum of 1,000*l.* be raised, the above sum (after deducting the proportion of the expenses) be appropriated for the erection of a window in the west end of the cathedral.

Halifax.—The memorial it has been decided to erect at Halifax will probably be an equestrian statue in bronze. A design by Mr. Thornycroft, which it is stated will cost 1,300*l.*, has been approved of by the Memorial Committee. Ward's End—a large open space in one of the most public parts of the town—is the site selected. This will be the first street statue erected in Halifax.

Harrogate.—The Prince Consort memorial east window in Low Harrogate Church, by Mr. John Knowles, a young artist from York, has just been completed. The window, which is in the Early English style, contains three separate lancet lights, and forms three sides of a hexagon. The side lights have been filled in with twelfth-century geometrical design, having quarterfoils of ruby intersected by straps of blue. In the inside of two of those quarterfoils are armorial bearings; the uppermost containing the arms of her Majesty, emblazoned on a shield and surmounted by the crown of England; the other the arms of his Royal Highness the Prince, quartered with those of her Majesty: this shield is also surmounted by the crown of the Prince Consort. In the quarterfoils that are not occupied with the coats of arms the space is filled up with rich centres of coloured leaves and straps. The remainder of the window between the borders and quarterfoils is filled in with amber glass and coloured semicircles out of which spring-scroll-work containing the leaves and berries of the *Herba benedictus*. The border is composed of the same leaves and berries on a variegated coloured ground. The middle light, which is the most important of the three, has for its design an elongated panel, in which the Ascension of our Lord is represented surrounded by the *Vesica Piscis*. In the foreground are the Apostles, the most prominent of whom is St. Peter. Above and below the panel are quarterfoils containing the "Agnus Dei," and the "I.H.S." The border of this light is also composed of the leaves of the *Herba benedictus*, on a ruby ground, intersected by semicircular shafts of white. At the base of the window is the following inscription:—"These three windows were erected by private subscription to the memory of his Royal Highness Francis Albert Augustus Charles Emanuel, Prince Consort, Duke of Saxe Coburg and Gotha, A.D. 1862."

Balmoral.—In Mr. Theed's studio, in course of preparation, is a statue of the Prince Consort, in Highland dress, intended for Balmoral.

COMPETITION FOR THE ERECTION OF A PROTESTANT CHURCH AT MONTPELLIER (HÉRAULT), FRANCE.

OUR advertising columns show that designs for a Protestant church, to be erected at Montpellier, are invited from English and other architects, and that varying premiums will be given to three of them. A copy of the conditions, with a plan of the site and schedule of prices of materials on the spot, may be obtained by early personal application at our office.

The sum to be expended is 8,000*l.*; and, if the author of the best design be commissioned to direct the works, he will receive 5 per cent. in lieu of the premium (100*l.*). Competent persons, including Mr. César Daly, will aid in the selection.

CROWFIELD CHAPEL, CODDENHAM, NEAR IPSWICH.

HALF-TIMBER CHANCEL.

THE restored church of Crowfield, near Ipswich, was a few weeks ago reopened for divine service by the Bishop of Norwich. It is a small picturesque building of the latter part of the fourteenth century; interesting as possessing a half-timbered chancel; the east window and side windows of chancel being of oak. The timbers of the walls, set at intervals of about 9 inches, were formerly filled in with clay and wattle, which had decayed, and would have fallen out but that the whole external surface had been covered with lath and plaster; but this was also in a perishing condition. These timbers are now exposed to view, both inside and outside; the interstices for the lower half of their height being filled in with flint-work; the upper half with brickwork, covered with plaster.

This timber chancel was found to be quite capable of repair; but the flint-built nave, owing principally to settlements caused by digging graves close to the walls, had to be entirely taken down and rebuilt.

The roof, which, when stripped of the plaster ceiling, was found to be one of much beauty, was shored up, and needed little repair beyond the lining between the moulded rafters with oak boarding, and supplying the carved saints and angels, of the former existence of which the tenons for fastening them were the only evidence. This has all been done, and the church repewed with oak benches with stall ends and carved finials; the stall seats in the chancel having carved angels on the elbows in addition to the finials.

The chancel is laid with Minton's encaustic tiles; the steps being formed of oak cills. The pulpit is an open platform, with oak book-desk; the lectern and prayer-desk, also of oak, being on

the opposite side. All the windows are filled with stained glass, by Mr. Hughes, of London.

A vestry has been added on the north side of the nave, where an old north door has been re-opened, and a south porch of carved oak has been restored. An oak bell-turret and spire, about 25 feet high, has been added from the nave roof, where it was on record that one formerly existed.

The whole has been done by local tradesmen; Messrs. Whiting & English, Mr. Golley, of Coggeshall, assisted by Mr. Wombwell, being the wood carvers.

The works have been executed under the direction of Mr. E. J. Hakewill, at the sole expense of the Hon. Lady Middleton.

THE DESIGNS FOR BLACKFRIARS BRIDGE.

AT a meeting of the Common Council of London, held on 26th ult., Mr. Vallance, chairman of the Bridgehouse Estates Committee, brought up a report from them in reference to the proposed new bridge at Blackfriars. On the 13th of February last it was referred to the committee to reconsider their previous report upon the subject, with instructions to examine the whole of the plans and estimates with professional assistance; to confer with the various engineers who had furnished the designs; and report again to the court.

"The report proceeded to state that they had substantially done all that, and had besides conferred with the Conservators of the Thames upon the matter. After full information had been afforded to them by the several engineers, and the careful examination of their designs and estimates, the committee determined to recommend that the proposed bridge should be one of five arches, springing from an abutment in a line with the present wharf lines on each side of the river. They then requested the various engineers who had sent in designs to modify them in conformity with that resolution as they might desire. Sixteen modified designs were, in consequence, submitted to the committee; comprising five designs for a stone bridge, ten for an iron arched bridge with stone piers, and one for an iron-girder bridge. After a full consideration of the subject, the committee did not see any reason to alter the opinion expressed in their former report; that, having regard to the length of time that would necessarily be occupied in the construction of a stone bridge, as compared with that required for the erection of a bridge with iron arches; and to the very great difference between the cost of a stone bridge and that of an iron one; it would not be desirable to adopt a design for a stone bridge. Having reconsidered the whole matter, they came to the conclusion that the best mode of carrying out what they conceived to be the views and wishes of the court would be for them (the committee) to select five designs, from which one should be chosen for adoption by the court. That being so, they carefully examined the several designs; and it appeared to them that those best calculated to meet the requirements of the public were;—The design of Mr. James Brunles, for a bridge of five elliptical arches, at the estimated cost of 230,573*l.*, including the cost of a temporary bridge; the design of Mr. Joseph Cubitt, for a bridge of five segmental arches, at the estimated cost of 265,000*l.*; the design of Mr. John Fowler, for a bridge of five elliptical arches, at the estimated cost of 280,000*l.*; the design of Mr. Robert William Mylne, for a bridge of five segmental arches, at the estimated expense of 308,000*l.*, exclusive of the temporary bridge and the reconstruction of the outlet of the Fleet sewer; and the design of Mr. Thomas Page, for a bridge of five segmental arches, at the estimated cost of 260,000*l.*, including an allowance for contingencies and for removing the present bridge. They accordingly submit those five designs to the consideration of the court; and, in accordance with an opinion expressed in their former report, they recommend that the engineer whose design may be adopted should be retained as the engineer to superintend the requisite works connected with the erection of the new bridge, and to make temporary provision for the traffic in the meantime. They also recommend that they should be authorized to take the steps referred to in their previous report for obtaining Parliamentary powers for raising the necessary funds for the erection of the works, upon the credit of the surplus rents and profits of the Bridge-house Estates. They concluded by expressing their thanks to the several eminent engineers who had furnished them with designs, for the talent they had displayed and their great care and attention in the preparation of those designs and of the accompanying reports and estimates; and Thursday, 3rd inst., was fixed for the consideration of the subject by the court at a special meeting."

EDINBURGH.

IT is intended to erect on the site of the tenement which fell in High-street in November last, and by which thirty-five people lost their lives, a tenement of four stories above the street, consisting of shops, warehouses, and dwelling-houses, the design being in the old Scotch Domestic style. The flat immediately above the shops is to be ornamented by an oriel window in the centre, which is intended as a memorial of the rescue of the boy M'Iver, who was buried among the *débris;* and who, on recognizing signs of the firemen's approach to his deliverance, exclaimed, "Heave awa', lads, I'm no' deid yet." At the request of the proprietor of this flat, a bust of the boy will be introduced on the keystone of the arch of the close; and underneath there will be a scroll bearing the above exclamation.

The Metropolitan and the Edinburgh Building Associations are each to build two rows of workingmen's houses at the Dumbiedykes. According to the *News*, the designs for the houses to be erected by the Metropolitan Association are by Mr. Paterson, the city assessor; and the estimates for the work have been accepted, and the building was to begin in course of last week. Mr. J. D. Peddie and Mr. Moffat are the architects for the houses to be erected by the Edinburgh Association; and the estimates for these houses, we understand, will also be ready immediately. Altogether, at this place, 200 houses will be erected, providing accommodation for a thousand persons, young and old.

The late Miss Barclay, among other legacies, left the sum of 10,000*l.* for the erection of a new Free church in Edinburgh. A site has been secured for the new edifice towards the north of the ground at Wright's Houses, Bruntsfield Links; and the building will be erected from the designs of Mr. Pilkington, architect. The main front will be to Leven-street, and will consist of a tower and spire, which rises from the pavement to a height of 250 feet, from the north-west corner of the edifice, and an adjoining gable, in which is placed a large window. A lofty porch, supported upon four small columns, and divided into two entrances, is situate at the base of the tower. The eastern front of the new edifice faces Bruntsfield Links. A circular tower, 135 feet high and 27 feet in diameter at the base, rises from the north end of the elevation; while a circular building, designed for the session-house and church-officers' apartments, is placed towards the south corner. At the east and west sides of the church are small porches. The interior is designed in the form of a clam-shell, and is divided into three parts, each of which is reached by distinct passages. The roof is 70 feet high. The church will be seated for 1,050 persons. Although the style of the new building is founded on the Venetian Gothic, the character of the edifice does not partake rigidly of the details of that style.

THE WORKS AT MONT CENIS.

SOME weeks ago you had an account of the operations for the formation of the tunnel under Mont Cenis; and it must be apparent therefrom that to facilitate the completion of the tunnel is a very important object. To effect that, I propose that a length of pipes, of some size, should be laid from the mouth of the tunnel to the working-stages;—that near the mouth and in the pipe there should be a fan-blower (and a blower is always a drawer) worked by steam or water. Now, as there is a shield near the working-stages, and also there is an injection of air from the outside; this addition, by taking away from the workings the noxious gases, left by the explosions of gunpowder, in a rapid continuous stream, before the shield is opened after every explosion (instead of leaving them to flow out in a sluggish manner, filling the whole tunnel), would save more than one-half the time the workmen now wait after each explosion for ventilation; and that waiting-time, as we read, is about two-thirds of the workmen's whole time employed. We should thereby effect a saving of three years in the operation, if not more. GEO. TODD, C.E.

PURIFICATION OF THE THAMES.

CONSIDERING the vastness of the scheme of metropolitan drainage, the enormous outlay, and great interference with public convenience in carrying it out, it might have been reasonably expected that a satisfactory and complete result would be obtained, affording a pattern for all other towns and cities. But it seems that after all these great works shall be effected, entailing such a heavy debt on the ratepayers for thirty years to come, the river will still continue in a state of great pollution, from the drainage poured into it by the immense population located on its banks above, continually augmenting, and flowing down to the metropolis. London may remonstrate against the nuisance; but suppose that all other places should follow an example of intercepting and conducting the foul matter into the stream a little below the seat of population, it is quite evident that, on the whole, no good would be done, no relief obtained, but only a transfer of malaria and an absolute waste of all the fertilizing matter; the intensity of the former being as the largeness of the population to the smallness of the river; a result which, in many of our midland towns, is becoming intolerable. It is quite clear, therefore, that the metropolitan scheme is not founded on principles of general application; and as the question is properly a national one, and of incalculable importance, both sanitary and economic, we look with anxious expectation to the result of the inquiry now pending in Parliament. It may be deserving of consideration, whether this subject has not hitherto been taken up from a wrong point of view,—viz., as a nuisance simply to be got rid of; and thus the course pursued has been directly opposed to that of nature. Organized matter cannot be got rid of or annihilated: its destiny is *reproductiveness;* and it *will* produce good or evil, according as it is dealt with. Nature proclaims the law unmistakably. If the refuse be not returned to the soil, it will punish the neglect by its noxious emanations; and it will equally and as certainly reward its legitimate application to the soil, by an incalculable amount of increased fertility. F.

CAN WE FORM A NEW STYLE?

THE inconsistency of modern architectural practice in employing so many styles, none of which can be said to be fitly representative of the nineteenth century, not having resulted from the growth of modern ideas—being purely reproductions of old styles originally emanating from an entirely different state of society—will strike most reflective minds as it has done that of your correspondent "Veritas." Our Gothic architects, who are the leading men of the day, avoid one inconsistency by advocating unity of style; yet it appears to me, until we possess a style more flexible, more capable of expressing our sentiments, and more adaptable to modern exigences than any at present in use; the former method, though perhaps theoretically absurd, is the only one practicable.

It is certainly surprising, in this age of advancement, that in architecture alone we should adhere so unflinchingly to precedent. In no other art or science in these days would such conservatism find favour. Modern civilization is preeminently distinguished by boldness of thought and subtlety of investigation. With scientific men precedent unsupported by fact or nature counts for naught. Indeed, it is the pure abstract nature of modern inquiry that has lifted us so rapidly to the proud position we now occupy; for with the recognition of every new *principle*, practical science permanently establishes itself a step further in advance.

Our present practice of art is so opposed to everything we learn from history of its progress among nations with whom it became a vital principle, that it seems incredible no one should have come forward to assist us with some really *new* ideas. By new ideas I do not mean a resuscitation of old ones; for all our art-movements have lately taken that direction; but something entirely different to what we have been accustomed to, if it be only a systematic attempt to unite elements which are now in conflict. Of a vague shadowy sort of writing we have plenty; but what we want is something more definite, such as illustrations; but these people are too timid to give, and too fearful of, adverse criticism. I believe it does not arise from any lack of originality among our best architects, but from habit and fashion. From the admiration excited by the splendour and superiority of ancient work, it has long been considered orthodox to copy it. Habit and precedent seize so strongly upon the human mind, that it requires almost a convulsion to unseat them. By the researches of many able and learned men we have more knowledge of the arts of antiquity than ever was possessed before. So far from its proving a hindrance, it ought, on the contrary, if properly applied, to open out a vast field of originality to us. Materials for a new style we have in abundance: what we require is ability to use them. Every day shows us elements and forms, formerly thought incongruous, combined, often with happy effect, in the productions of rising architects; but what is done is done timidly, and generally confined to minor details. If the introduction of ideas from one style into an opposite style is attended with success in minor instances, why should not a systematic attempt at combination also be successful? Each style possesses beauties peculiar to itself; then why, if it can be done, should we hesitate to combine those beauties? The objection usually made to such a suggestion is, that combination would destroy the beauties of both,—like negative and positive electricity, neutralize each other; but such an opinion is more often founded upon theory than practice; and any student who brings his mind without bias to the study of the nature of lines will, I feel assured, in time create originality. Such theories are, I know, pooh-poohed by many; but I ask any sensible man who has not been educated in

the prejudices of the day, whether, in the nature of things, such a course would be unreasonable?

In the works of the greatest opponents of what is termed eclecticism, if original, we find in their designs foreign elements introduced; and it must of necessity be so; for the human mind is not comprehensive enough to *create* anything in the highest meaning of the term, but can only combine and arrange. By retaining the purity, as it is called, of any particular style or period, we shut out original conception; for if new features are introduced, the character of the style is changed; therefore, how foolish and unreasonable it is for us to be such sticklers for chronological unity. When I hear that any building is in the thirteenth, fourteenth, fifteenth, or sixteenth century Gothic, or any particular phase of any style, I think what unmitigated copyists we are; for, without strict adherence to all the minor points of the style, it could not be so denominated. At the same time, it does not follow but what a design which claims to be of no particular style may be mere mongrel architecture. In Gothic, originality led to continual change, as it cannot but do in any style; but in Gothic, the changes were very rapid and marked. The Gothic architects never looked back as we do, and the style went through the whole process of development and decay: it exhausted itself by its own efforts; and, if we wish to regenerate its beauties, it must be done by engrafting upon the old stock some new shoots.

That there is any necessity for copying any preceding style in all its integrity, I do not believe; and all experience is against it. Are all the "forms and lines of art divine" exhausted, that we cannot invent any new combinations for our own gratification and use? Pure Grecian or Gothic architecture in the present day, beautiful though they be, are gross anachronisms; and we find now that the question of styles is resolving itself into one, not of beauty, but adaptability, as we may see from Mr. Burges's paper upon Athens. Can it be disputed, then, that, if adaptability is to be the argument adopted in favour of any particular style, one might be invented much more applicable to our purpose than any now in use?

The subject is so great and so interesting, that it is to be hoped architects may be awakened to the serious consideration of such a contingency as the introduction of a new style; and I am quite sure the public will have no prejudice against its advent, but would rather feel interested in its success; for it has often puzzled them why architects go on contented with repeating *ad nauseam* the ideas handed down by their ancestors. I feel convinced nothing would more conduce to the popularity of architecture than the healthy interest such a movement would create in the public mind.

At present, the abortions which disfigure our towns result from the want of interest which is felt in artistic decoration; and, consequently, an architect often is not selected for the quality of his designs,—the public reasoning that one is as good as another: at least, it would appear so from the success obtained by joiners, auctioneers, and others, who often *profess* to a knowledge of the profession.

T. MELLARD READE.*

WORKMEN AND CHURCHES.

MAY I ask you to give me a small corner of your paper to draw the attention of builders and all large employers of labour to the fact that few working men go to church? For some years I have noticed this among my own men, and feel it my duty to call attention to the sad fact.

The chief cause of it in London (except in the City) is want of churches. Take, for instance, a rising suburb, say Sydenham, Brixton, or even Chelsea and Pimlico: there is no parish church, or it is full, and one or two churches are built. To support them and pay for the building, the pews are let at about 20s. or 30s. a sitting; consequently, only the middle classes go. The mechanic cannot afford the money, and goes nowhere. No matter how anxious the clergyman is to do his duty, he cannot ask the poor to go to his church, as he must pay his way.

Dissenters are in the same difficulty. They must have those who can pay. What this paying means, those know who attend church or chapel, and remember the endless collections, besides the mere pew-rent, for interest, or the everlasting "building-fund," "missions" of all sorts, "expenses," &c., &c. The Gospel in old times was preached to the poor, who must now forego the privilege in favour of the rich. If any man thinks this untrue, let him go round a few of the suburban districts, and see those who go to church, and who not. It is not because the poor do not wish to go: witness the audiences at the preaching in theatres.

The first difficulty is churches. Cannot architects lessen this by making designs less costly, and studying the reception of the largest possible number at the smallest possible expense? Builders have workshops: might not they induce their men who live near enough to meet in them on Sundays, with their families, and let one of the men read the Church service, and a sermon out of a book—say Wesley's, Barrow's, or Baxter's? I have no doubt that if employers of labour would thus personally interest themselves in the eternal welfare of the men, the men themselves would take the matter into their own hands shortly, and get up cheap churches—for instance, hire large rooms for themselves.

It must, however, be noticed that the example must be set by some one: the men themselves must be talked to, and induced to go to church. Messrs. Peto & Betts, when making the Victoria Docks, built a wooden church, and paid a preacher. I have several times gone there, but never saw *one in fifty of their men*. So it comes to this, that the masters must remember that God will one day call them to account for the use to which they put their influence over those under them, and act accordingly.

J. P. W.

P.S. I may add that Messrs. Silver have set a good and encouraging example at their works, near Woolwich.

* Under the title,—"Suggestions on the Formation of a New Style of Architecture, specially adapted to Civic Purposes:" (Weale), Mr. Reade has recently published a book to illustrate his views. We must take another occasion to speak of it.

PATENTS CONNECTED WITH BUILDING.

IMPROVEMENTS IN SCREW-WRENCHES.—*W. T. Weston.* Dated October, 17, 1861.—This consists in forming on either side of the handle of a screw-wrench, containing one fixed jaw or chop thereof, a toothed rack, the situation of which is at that part of the handle of the wrench along which the movable jaw or chop is to slide; and in furnishing such movable jaw with an eccentric thread or helical worm, formed on a disc or button having a milled edge; the disc being perforated with holes similar to a windlass or capstan, and placed with its pivot perpendicularly with regard to the rack into which it works; so that, by turning such screw or thread by means of its milled edge, or by the application of a lever, to the holes, the movable jaw is caused to move along the rack as may be desired with respect to the fixed jaw of the wrench.

IMPROVEMENTS IN STEAM-HAMMERS.—*T. Fearnley.* Dated October 19, 1861.—The patentee forms the steam cylinder annular, in order that the ram may pass through the inner or central part of such cylinder, and thereby have increased guiding surface in its motion, as also to reduce the height of it; and he forms the piston annular with rods passing through the head of the cylinder to a cross-head affixed to or formed upon the ram, or through the bottom of the cylinder direct to the hammer above the head. He also forms the hammer to surround the cylinder; the piston-rod being keyed into the hammer just above the head. In this case the cylinder is fixed to the upper part of the framing, and the framing below is bored, to receive and guide the hammer in its motion; whilst the inside of the hammer is bored true to slide on the cylinder. He also gives motion to the valves of steam-hammers by means of a spiral groove or feather, cut or formed in the hammer, acting upon a pin or stud in connexion with the valve or valves.

IMPROVEMENTS IN LIFTING OR HOISTING APPARATUS.—*J. Lister & D. Myers.* Dated October 16, 1861.—These improvements in apparatus for arresting the fall of the cage or basket in a mine, relate, first, to a combination of parts connecting the rope or chain with the article to be lifted. 2. To means for preventing the overwinding of the rope, whereby accidents often occur from the cage being pulled over the top pulley. The details of the invention are voluminous.

IMPROVEMENTS IN THE APPARATUS FOR AND METHOD OF INCREASING THE ILLUMINATING POWER OF GAS.—*W. Smith.* (A communication.) Dated October 17, 1861.—This invention consists in the use of a box containing capillary arrangements or apparatus, as described, for producing an atmosphere of benzone vapour for the purpose of charging the gas passed therethrough, as set forth. Also, in the use or employment of the capillary arrangement or apparatus described, whether benzone or any other liquid carbon be employed, for the same or similar purposes.

AN IMPROVED SPRING AND FASTENING, APPLICABLE TO GATES, DOORS, &C.—*W. T. Weston.* Dated Nov. 4, 1862.—This invention consists in the application of a fastening to a straight rod or bar of hardened and tempered steel, thereby to twist or turn it so as to form a spiral, in order that, in the continual effort to regain its natural position, it may exert an action or force analogous to that exercised by springs of some other different constructions.

IMPROVEMENTS IN MACHINERY FOR ENAMELLING MOULDED SURFACES.—*J. H. Johnson.* (A communication.) Dated Oct. 29, 1861.—This invention relates to a peculiar construction and arrangement of machinery or apparatus for applying enamel to the surface of wood mouldings in the process of preparing them for gilding, as well as for the purpose of making an enamelled surface upon all material capable of being heated in this manner. The essential features of this invention consist in the employment of a plate, the lower edge of which is formed or shaped the reverse of the tranverse form of the moulding to which it is applied, when such plate is made self-acting to the surface of the moulding whilst being traversed longitudinally over it. Also in the employment of a hopper, or other suitable receptacle to contain the enamelling composition, having the lower edges of the two end plates thereof formed or shaped the reverse of the transverse form of the moulding to be enamelled, such moulding constituting at the same time the bottom of the hopper or receptacle.

IMPROVEMENTS IN MACHINERY OR APPARATUS FOR MAKING PIPES AND OTHER ARTICLES OF EARTHENWARE, AND IN THE FORM OF PIPES FOR GAS, SEWAGE, AND OTHER PURPOSES.—*T. Spencer & T. Robinson.* (Partly a communication.) Dated Nov. 2, 1861.—This invention refers to those machines in which the direct action of steam or other fluid is employed for forcing the plastic material through or into dies, and consists in the employment of an additional power, whereby the patentees are enabled to maintain the pressure after the moulding has been effected, and to work with a less pressure of the fluid. Another part of the invention relates to making articles of earthenware by a plunger, which is forced into a mould, and consists,—1, in covering the said plunger or mould with cloth or other such material, which may be peeled off; and, 2, in giving the said plunger a roughened surface. Another part of the invention relates to making pipes or other articles with a socket or other design at each end. Another part relates to a particular form of pipe for gas and sewage; which pipes they make with an enlarged part at one end, within which there is a recess, and the other end with a part capable of fitting into a similar recess upon another pipe; and they prefer so forming the ends that the interior diameter shall not be interrupted with projections.

CERTAIN IMPROVEMENTS IN STEAM-HAMMERS, AND IN VALVES APPLICABLE TO THE SAME AND TO OTHER STEAM-ENGINES.—*R. Wilson.* Dated November 5, 1861.—This consists in an improved arrangement of valves and gearing for working steam-hammers, by which the steam may be admitted both below and above the piston to which the hammer block or ram is connected, or only to the former when required. The improvements in valves for steam-hammers and other steam-engines consist in so constructing them that their area, and, consequently, the weight and power required for working them, are greatly reduced.

IMPROVEMENTS APPLICABLE TO BUILDINGS, IN ORDER TO FACILITATE THE EXTINGUISHING OF ANY CONFLAGRATION WHICH MAY HAPPEN THEREIN.—*W. P. Bayliss,* the Lloyd's, Madeley, Shropshire. Dated 20th November, 1861.—This invention consists in constructing buildings with each apartment or compartment with an aperture or apertures at the upper part, the said apertures being in (or communicating with) tubes or channels opening into the nearest chimney or flue; or the tubes or channels may be continued and opened into the external atmosphere. Hence, if a conflagration should take place, it will only be necessary to close the apartment or compartment, and the smoke and fire will find vent by the said channels, flues, or tubes. Also, for the purposes aforesaid, the patentee provides a cistern or receptacle at the upper part of the building, from which pipes descend which reach from the said cistern to the basement of the building, and may form supporting columns or pillars to it. The tops of the said pipes, where they open to the cistern, have proper valves; and from these pipes, at every floor of the building, other pipes or channels branch out in such manner that valves may be applied to stop the first-mentioned pipes at the level, or nearly so, of such branching pipes; causing such flow of water from the cistern to run into the said branching pipes or channels; and thence, through suitable apertures, into the apartment or compartment, or any two immediately adjoining or contiguous apartments or compartments; and this without allowing the entry of the water into any other apartment or compartment. The floors and roofs should be fireproof.

HARDENING STONE, &c.—*J. B. Hulard & L. G. Poupel,* Paris. Dated 25th November, 1861.—The composition which the patentees prefer for their indurating liquid contains the following ingredients in certain proportions:—Borax, white lead, sulphate of alumina, acetate of lead, sulphate of zinc, silicate of soda or of potash, kaolin, linseed oil, and water.

* Selected from the lists in the *Engineer*.

Books Received.

Isca Silurum; or, an Illustrated Catalogue of the Museum of Antiquities at Caerleon. By JOHN EDWARD LEE, F.S.A., &c. London: Longman & Co. 1862.

THIS is much more than a mere catalogue: it contains a good deal of interesting antiquarian matter in connexion with descriptions of the various objects catalogued; and also numerous truthful-looking illustrations, executed by the author,—all the plates, including chromo-lithographs, being either transfers from his own etchings or having been drawn by him direct upon the stone. Nearly all the antiquities drawn or described are now in the museum of the Monmouthshire and Caerleon Antiquarian Association. The volume also contains a notice of the excavation at Caerwent, by Mr. O. Morgan, M.P., reprinted from the "Archæologia;" and an abridgment of a paper "On Caerleon," by Mr. F. Wakeman.

VARIORUM.

"A Handbook to the Guildhall and the various Offices of the Corporation of London: illustrated. Second edition. London. 1862." This well-compiled and useful guide is one prepared by Mr. Abraham Harvey, the beadle or custodian of Guildhall. It contains minute descriptions of the various objects of interest, rooms, &c., in the building, with some interesting historical matter, and information as to the various business departments, hours of attendance, officers' names, and other useful details.——"Naval and Commercial Docks on the Mersey: a Letter addressed to John Laird, esq., M.P. for Birkenhead. By J. Abernethy, esq., C.E.; with Plans. London: E. Wilson, Royal Exchange. 1862." Mr. Laird being of opinion, with others, that farther dock accommodation will be requisite on the Mersey, even after the completion of the Birkenhead docks; and considering that Tranmere would form an excellent site; requested Mr. Abernethy to report to him on the subject. The result is the pamphlet under notice, in which plans of a naval and a commercial dock are given; the estimated cost being 900,000*l.* for the naval dockyard, and 850,000*l.* for the commercial dock, exclusive of land, chiefly unoccupied foreshore. —— "On the Registration of Births, Deaths, and Diseases. By A. Harkin, M.D., Belfast. Dublin: Hodges & Smith. 1862." This pamphlet contains a paper read before the Social Science Association at Dublin in 1861, with notes and addenda. In case of a Registration Act for Ireland being passed, it proposes certain improvements on the Act for England, and points to a division of offices into sub-registrar, superintendent registrar, and registrar general.—— "History and Description of Needle-making. By M. T. Morrall, Manchester. 1862." This penny tract may be said to belong to the International Exhibition series of publications. It is historically illustrative of the useful little article exhibited by Mr. Morrall as the product of the Morrall machines. It would be well were many other exhibitors to treat of their respective articles of manufacture in a similar way; although there is a risk of this sort of thing degenerating into mere advertising puffs, which this does not appear to be.——"The Coins of England: published in sheets and books by Griffith & Farran, St. Paul's Churchyard, London;" is another Exhibition product, and in the book form must be useful to foreigners. It gives what we may call rubbings of our several coins, on gilt, silvered, and bronzed paper, with their respective values in French, German, Dutch, Spanish, and American coins.——"The Men at the Helm: Biographical Sketches of Great English Statesmen. By W. H. D. Adams. With illustrations by J. Franklin. London: Hogg & Sons." The intention of this volume is to furnish youthful students with a more comprehensive summary of the careers and policy of some of our most distinguished statesmen, now deceased, than common school histories afford; and to supply a companion and sequel to those elementary works. The amusement of a leisure hour, and a book of reference to more advanced readers, have also been objects kept in view by the author. The Earl of Aberdeen is the last of those statesmen whose career is here treated of. The volume contains some interesting reading, without much political bias.——"The Fleet of the Future in 1862; or, England without a Fleet. By J. Scott Russell, esq., F.R.S., V.P. of Institution of Naval Architects. Second Edition. London: Longman & Co. 1862." Mr. Scott Russell is startling the country with very forcible and able denunciations of that mismanagement and waste whereby we are virtually left still without a fleet, while 30,000,000*l.* sterling have been wasted during the last seven years in the vain attempt to realize one. By being "without a fleet" he means that nothing but a fleet of *Warriors* now merits the name; and that our wooden fleet is virtually no fleet at all. We have only two such vessels as the *Warrior;* and therefore our war fleet is yet to be built, although we have spent on our nominal navy, since the desirability of having such vessels was known and admitted, as much money as would have produced sixty *Warriors* of the enlarged class of 7,000 tons,—sea-going, sea-worthy ships, capable of running at the rate of fourteen knots an hour, and possessing complete shot-proof batteries. Mr. Russell charges the Duke of Somerset with literally wasting 12,000,000*l.*, which, during the last three years, his grace "has muddled away in the dockyards, producing nothing," though it might have produced a fleet of some twenty *Warriors.* "The ineradicable evil is this," says Mr. Scott Russell, in allusion to the Board of Admiralty,—"that where the knowledge is, the power is not; and where the power is, the knowledge is not." The House of Commons, he urges, ought to buy a fleet, not build it; expending at least 3,000,000*l.* a year on the work; and as for the dockyards, and what is to become of *them,* he adds significantly,—"Which do you wish to have,—fleets or establishments?"——"Colour to Sculpture: Is it applicable? A Letter to T. C. Grattan, esq. By C. D. Griffith, esq., M.P. London: Hardwicke, 1862." The reply to the query in this title is, that "The distinctive character of every work of art is, that it should be suggestive only, and not completely imitative,"—and "that a work of art is an appeal to the imagination; that it is in no case a mere physical imitation; and that, as soon as it is extended so far as to become an imitation, or appeal to the senses alone, the interest felt in it previously by the mind or imagination fades away, and it becomes by reaction rather a repulsive than an attractive object."—— "On the Establishment and Management of Cottage-Improvement Societies. By W. A. Greenhill, M.D. Oxon. London: Longman & Co. 1862." This pamphlet contains a paper read in the fifth department of the Social Science Congress, at Guildhall, London, last month; and it is based on the experience gained from two societies with which the author is connected; namely, the Hastings Cottage Improvement Society, and the London Labourers' Dwellings Society, of both of which we have occasionally spoken.

Miscellanea.

EXPENSE OF A HARBOUR.—The entire cost of the work performed in the construction of the harbour of St. Catherine, in the island of Jersey, exclusive of purchases for land defences, is 234,235*l.* 16s.

SINGLE SHAFTS IN COAL-MINES.—The Government Bill laid before the House of Commons proposes to enact that, after the passing of the bill (except in merely searching for minerals), it shall not be lawful for the owner of a new mine, or old mine the working of which shall be begun afresh,—and, after 1864, it shall not be lawful for the owner of an existing mine,—to work the same without two shafts or outlets, separated by natural strata of not less than 10 feet, and affording distinct means of egress.

BRIGHTON.—At length, says the local *Herald,* there appears to be a prospect of some improvements being made to the principal thoroughfares leading from the Railway Terminus into the heart of our town. We may now hope that those eyesores at the very entrance to the town, the slaughter-houses in the Queen's-road, will be removed; that the chief approach to the sea, by West-street, may be rendered more commodious; and that the great traffic of North-street will be relieved by the widening and otherwise improving of North-lane. Important steps with reference to these improvements have been taken by the Town Council. —— The foundation-stone of the new church of St. Ann, for which an endowment was provided under the will of the late Mrs. Cook, has been laid. The site is at the north-east end of Burlington-street, Marine-parade. The church is to consist mainly of a nave, chancel, and side aisles, built in the Decorated style. The total length of the church is to be 114 feet 6 inches, its total breadth 59 feet 6 inches. The edifice will be built of hewn Kentish rag-stone, with Bath-stone dressings. The seat accommodation is computed for 900 sittings, 500 free. Mr. Ferrey is the architect, and Messrs. Cheesman & Freeman are the builders.

WHIPTON.—All Saints' Chapel, Whipton, a chapel-of-ease to Heavitree parish, Exeter, was consecrated on the 23rd ult. The building consists of nave, with stone bell-cot, north transept, chancel, a porch, and vestry. There is accommodation for about 200 persons. The style is the Geometrical. The walls are faced with Killerton stone, and the dressings are of Coombe Down stone. The avenues and chancel are laid with tiles from Poole pottery. The roofs and seating are of deal, stained and varnished. There is a burial-ground, walled in, of three-quarters of an acre. The architect is Mr. Ashworth, and the builder Mr. Kenshole. The cost of the work is about 1,500*l.*

INVENTIONS FOR THE PREVENTION OF RAILWAY ACCIDENTS.—Mr. Grivel Jeune, a French engineer, has recently patented two inventions for preventing railway accidents, and they are now on view at the Whittington Club. They are thus described by the inventor:—"First, a self-acting apparatus, indicating to the driver of a train if the line is clear, and if a preceding train is at a proper distance or not; and warning him of same in any weather or season." Second—"A new description of brake, to stop the disastrous results of a locomotive mounting an incline to which carriages and trucks are attached, paralysing the rupture of the coupling chains; arising either from the too great weight, or from flaws in the manufacture." The action of the inventions is explained by means of models and drawings.

ARBITRATION CASE: TERREY *v.* GOBBY.—A correspondent says, an award has just been made in this case, wherein the plaintiff had agreed to do certain works of seven houses, in Merlin's-place and Margaret-street, Clerkenwell, in rebuilding the upper portion of fronts, chimney-shafts, water-closets, outbuildings, &c. The action was brought for a balance of 23*l.* 10s., which the defendant refused to pay, being dissatisfied with the manner in which the works had been carried out. These he had to complete himself, and to pay the surveyor's fees, in respect of which plaintiff pleaded non-liability. The estimate for works was 154*l.*; and it is understood that the costs, amounting to more than this amount, will have to be paid by plaintiff, the award being against him.

SALE OF ARGYLL HOUSE, REGENT-STREET.—On the 27th, by direction of the Earl of Aberdeen, Messrs. Rushworth, Jarvis, & Co., put up to auction at the Auction Mart, the freehold property known as Argyll House, situate in Argyll-street, Oxford-street. It occupies an area of 21,675 feet, with a frontage of 62 feet to Argyll-street; and adjoining it is a freehold residence in the occupation of Sir William J. Newton, held for 80 years at a peppercorn rent from 25th of March, 1820. The mansion comprised a paved court-yard with carriage gates; a paved hall, 30 feet by 21 feet; a great drawing-room, 27 feet by 21 feet; a banqueting-room, 43 feet by 31 feet; a library, 24 feet by 19 feet, &c., all fitted with statuary, &c. The first offer was 10,000*l.*, which gradually increased up to 18,500*l.*, at which um it was sold.

NATIVE TALENT.—The *John o'Groat Journal* mentions the works of James Coghill, a working mason at Wick. He picks up a piece of granite, and with hammer and chisel and laborious hand-polishing he turns it into a vase. He has managed to make both picture and frame out of the same durable material. A specimen of this kind of work in Welsh slate, lately finished, gives a view of Ackergill Tower from the east. He has a book-case, the front of which is divided into compartments, each of which is fitted with a model of a cathedral window; some pointed and some circular, and of the most intricate patterns; each of them cut out of this same Welsh slate. Several of these designs are taken from specimens of cathedral windows that have appeared from time to time in the *Builder.* His *chef-d'œuvre* is John o'Groat's House. The tradition, as everybody knows, is that John and his seven brothers had disputes about precedence, which were settled by the building of a house with eight doors leading into an octagonal dining-room, where each one sat at the head of the table. Carrying out this idea, Mr. Coghill has designed and constructed a model of the traditionary John o'Groat's House, in Caen stone, complete as regards both external and internal fittings. It contains several hundred windows; has a tower in the centre; and cost its constructor the leisure hours of half-a-dozen years to finish it. It is to be hoped he has some to direct his labour aright; or he may, after all, be wasting it. There is a melancholy specimen of such industry misdirected at the International Exhibition, in a huge model of a cathedral cut out of corks.

SOCIETY OF ANTIQUARIES.—Miss Burdett Coutts has placed her house in Stratton-street at the disposal of the council for a *conversazione*, which will be held there on Monday next.

PUBLIC MONUMENTS IN THE METROPOLIS.—Mr. Hankey asked the First Commissioner of Works when the return of public monuments and statues in London, ordered on the 3rd of June, 1861, would be laid upon the table? Mr. Cowper said he felt considerable difficulty in getting accurate information on some of the details of the return, but he thought he should be able to lay it on the table in a few days.

MONUMENTAL.—The pedestal for the monument to be erected in Boston to the memory of the late Mr. Herbert Ingram, M.P., has just been finished by Mr. M'Glashan, at his granite works, near Peterhead. The pedestal is a massive piece of granite work. It is in the form of a sloping square, of 4 feet 3 inches; and is 11 feet 4 inches high; composed of three blocks of polished Peterhead granite, with a base (8 feet square) of polished Aberdeen granite in the form of two sloping steps. In front there is a niche for a small statue and water fountain; the cup being hollowed out at the base of the niche. The marble statue of Mr. Ingram (being presently executed by Mr. Munro, sculptor, London) is to stand on the pedestal; and the monument, when finished, will be 23 feet in height. The design of the pedestal was prepared by Mr. Munro, the sculptor: its weight is about 22 tons.

IMPORTANT TO BUILDERS AND OTHERS.—A case of considerable importance, as affecting the relation of employers in the building trades and their workmen, has been decided at Edinburgh by Sheriff Jameson in the Small Debt Court there, and is reported in the local *News*. John Rodger, a wright, in the employment of Mr. John Ewart, builder, sued his employer for 18s. 7d. of wages, in respect Mr. Ewart had discharged him without warning. After Rodger had entered into Mr. Ewart's service, Mr. Ewart had intimated to his workmen, when paying their wages, that, thereafter, the rule of the shop was to be that warning would neither be given nor required; and Mr. Ewart had caused a printed notice to that effect to be put up in his workshop. Rodger admitted that he had read the notice, and had afterwards continued in Mr. Ewart's employment. The Sheriff held that an employer was quite entitled to make a rule that no warning should either be given or required; and thus to alter the custom of the trade as regarded the workmen in his individual employment; and, therefore, decided in favour of the employer.

BRIDGE ACCIDENTS.—At Pateley Bridge, a new wrought-iron bridge, crossing the river Nidd, was in course of erection. The bridge was constructed upon the lattice principle, 100 feet span, with 10 feet carriage way, and was designed by Mr. R. Hodgson, of Newcastle. The contractors are Messrs. J. & G. Joycey, of Newcastle. Each girder weighs about twelve tons. About one month had been occupied since the arrival of the material in riveting the sides to their proper length, and launching them across the river. The girder to the side was placed in position. The other girder, lying parallel with it, remained straight at the time of the misfortune, and was all but ready for lowering the ends on to the stone beds prepared for their reception, when the breaking of a chain in the middle caused the girder to swerve; and, falling on its side, it was precipitated into the water, lying in confusion amongst the scaffolding. Had it fallen in the opposite direction, the destruction of the girder then in position would also have been certain, and many lives would have been placed in imminent danger. The accident with the Lendal lattice-bridge at York was a somewhat similar one. It is rather remarkable, also, that a destructive accident happened to one of the girders for the bridge at Pateley, when first dispatched from Newcastle. The coupling chains of the trucks upon which it was placed breaking, they became disengaged, and the whole were impelled over a bridge into a roadway at Gateshead, 30 feet deep. The cast-iron was broken into fragments, and the wrought-iron twisted into various shapes, but happily no lives were sacrificed.——A railway-bridge over the Old Bridge-road, at Luton, has recently been widened for the purpose of laying down a double line of rails. During the time the work was being carried out the weather was showery; and, when it was determined to strike the centres, the abutment moved about three quarters of an inch, and the crown of the arch of the new part of the bridge fell about an inch. The centres were readjusted, and workmen were engaged to strengthen the abutments, so as to avoid any trouble of the kind in future.

PROGRESS OF HULL.—In 1861 the population was returned at 109,000; and this year it is estimated at 110,800; while in 1836 it was only 65,000. The property rateable last year was 238,504*l.*; and in 1836, 176,559*l.* In 1860 the tonnage of the shipping entering the port was 833,633 tons, as compared with 490,044 tons in 1836; and the clearances outwards were 798,217 tons in 1860, against 421,938 tons in 1836. In 1836 the area of the docks was 23a. 0r. 39p.; while now the area of the dock accommodation is 40a. 5r. 28p.; and the area of the proposed new West Dock is 17a., and the increase to the Victoria Dock is 6a. The sanitary condition of the population is said to have of late materially improved.

WORSSAM'S MACHINERY FOR CUTTING WOOD. This invention, by Samuel W. Worssam, of the King's-road, Chelsea, relates to sawing machinery for cutting logs or large baulks of timber, both longitudinally and transversely. The first part of the invention relates to the machine for cutting up the timber longitudinally, and the second part of the invention relates to the machine for cutting up logs or timber transversely. In the sawing machine for cutting up the log longitudinally, the log is placed on a travelling platform, which is actuated by gearing, so as to bring the timber up to the saws; or the log may be fed forward by means of feed-rollers, without the use of the travelling platform. The saws are attached to the cross-heads of a vibrating framing, to which an up-and-down motion is given by means of a connecting rod and crank, driven by any prime mover; but the saws (of which there may be one, two, or more, as may be required) are arranged to work outside of the main standards of the machine, so that the log may be moved up laterally to the saws when the cuts have been finished.

THE RIGHT TO RING CHURCH BELLS. — A paragraph under this heading went the round of the papers in April last, with reference to a disturbance which had taken place in Thurnby, near Leicester. The vicar had inhibited the bells being rung on occasion of the meet of some hounds in the parish, and fastened the belfry door, taking possession of the key. One of the churchwardens, with others assisting, maintaining that the vicar had no voice in such a matter, broke open the door, and set the bells a ringing in defiance. The case was brought before the magistrates at Leicester, who dismissed it, as the question of right did not come under their jurisdiction. The case was afterwards taken to the Court of Arches; and on the 18th of June (as reported in the *Times*), the judge, Dr. Lushington, on admission of the articles against the churchwarden, the parish clerk, and the ringers, admonished them to refrain from the like conduct in future,—namely, that of ringing the bells contrary to the order, and against the remonstrances, of the vicar; and condemned them in the costs of the suit.

VALUE OF TOWN SEWAGE.—At the last meeting of the Royal Agricultural Society, Dr. Voelcker delivered a lecture on the value of town sewage. Mr. Hofmann, he said, had estimated that the fertilising matter of sewage was worth about 2d. per ton, or 17s. 7d. per 100 tons. And taking the fertilising property in the London sewage at the estimate of 90 grains of solid matter per imperial gallon—though that was a high average—the sewage of London would be worth 3,796*l.* per diem, or 1,385,540*l.* per annum. The calculation of the value of sewage, however, was always made by a comparison with Peruvian guano, which was taken at 11*l.* per ton, and it was hardly fair to compare the dry matter of sewage, of which one-third only was valuable, with a material like guano, which contained scarcely any worthless matter at all. He considered that a ton of the solid matter of London sewage was worth for its ammonia 4*l.* 1s. 6d., at 6d. per lb.; for its potash, 17s., at 3d. per lb.; and for its phosphoric acid, 3s. 2d., at 2d. per lb. By this calculation a ton of London sewage would be worth for its fertilising properties 1¾d. However, it would be very fallacious to draw the conclusion that, because the fertilising materials in a ton of sewage were worth that amount, its value as a manure to the farmers must be estimated at that price in the same way as guano was when sold at 11*l.* per ton. They must consider the bulk in each case, and the worthless matter in sewage. An interesting discussion took place at the conclusion of the lecture; and, in reply to questions, Dr. Voelcker remarked, that anything that was grown very quickly was inferior in quality to the same kind of thing that was grown more slowly; but of course it was quite another thing whether it was not more profitable to producers to have the large increase in quantity, although it was attended by some degree of inferiority.

CONSUMPTION OF NAILS.—The number of nails manufactured in Bromsgrove is so enormous, averaging about ten millions weekly, that the wonder is that such vast quantities should be wanted. As an example of the numbers required, the *Worcester Chronicle* states that in the erection of the Great Exhibition building 200 tons were used; which, upon a fair computation, would give about 33¼ millions of nails.

GAS IN SCOTLAND.—The Hawick gas company have declared a dividend of 7½ per cent. on their original shares, and reduced the price of their gas from 6s. 8d. to 6s. 3d. The chairman of the annual meeting wished to make the gas cheaper, but some of the directors erroneously argued as if reduction of price were equivalent to reduction of dividend, and hence resisted the chairman's proposal.——The Kelso company have declared a dividend of 10 per cent. on their paid-up capital. The price has been reduced from 7s. 6d. to 6s. 8d.——The Elgin company have declared a dividend of 6 per cent., and a reduction of price to 8s. 4d. and 7s. 6d. according to locality.

FINE ARTS CLUB.—On Wednesday evening Miss Burdett Coutts placed her fine suite of rooms in Stratton-street, Piccadilly, at the disposal of the Fine Arts Club; the occasion being a *conversazione* given by the members of that association. The rooms on the drawing-room suite were in great measure decorated by contributions which had been supplied by members of the Fine Arts Club; and amongst these were some very rare articles of vertu and specimens of gold and china manufactures. Perhaps the most conspicuous objects—or at least those which excited the most marked attention—were a magnificently ornamented gold salver, contributed by Earl Cowper; and a splendid cameo, of most unusual dimensions, representing Jupiter and Thetis, belonging to the Right Hon. W. E. Gladstone.

REVOLVING BATTERIES.—In reference to a claim of precedence to Captain Coles made by Mr. Forbes, of Bartley, Mr. John Elliott, in a letter to the *Hampshire Advertiser*, claims precedence to Mr. Forbes, and says:—"That part of my plan for the use of revolving batteries appeared so important to his Grace [the Duke of Richmond, for whom Mr. Elliott was acting professionally], that he invited me to Goodwood to meet Sir John Burgoyne, to discuss the subject. The plan I laid before him was to construct a circular vessel to receive the cannon, and to float that in a sunk tank. My plan was afterwards described in detail in the *Builder*. Sir John stated that it was extremely ingenious; but that, the object in coast defence being a scattered fire, and not a concentrated one, he considered the invention of no practical use. Dwelling on his words, and considering that a concentrated fire must be necessary in naval warfare, I designed a ship with four revolving protected batteries on deck, on the turn-table principle, and took this to Admiral Ommanney, who so pooh-poohed and ridiculed it as to deter me from publishing it; and I thus lost the reward Captain Coles has so deservedly obtained."

A NOVEL BUDGET.—Mr. T. H. Willis suggests a concentrated and simplified scheme of taxation. He proposes a single tax on the occupants of land, built upon or unbuilt upon,—that is, in town and in country,—at varying rates, per acre, according to estimated values; at same time repealing all property and income taxes, excise levies, and assessed taxes and rates, as also custom dues generally. The land, for these purposes, Mr. Willis divides into—1st, covered land; 2nd, land worked as mines or quarries, and as brick and pottery grounds, wood land, or as taken up for railways, tramways, and canals; 3rd, land used as gardens, nurseries, parks, yards, &c.; 4th, land employed in tillage or pasturage; and 5th, land held for all other purposes, as game-preserves, &c. He indicates, as a criterion of the extent of rate or tax, that 2s. per acre on 40,000,000 acres of cultivated land in the three kingdoms would suffice; and calculates that covered land alone would yield 35,000,000*l.*; the average levied rate being estimated at 70*l.* per acre, on 500,000 acres. In this scheme it is "recognized as a principle in law that the land may be assessed as a *personal* tax in respect to land, but not as a tax *on* the land." The same principle of taxation, Mr. Willis adds, "might be applied, and with the same advantages to the occupying tenant, in respect to parochial rates and all other local rates and taxes;" and in all cases "every taxpayer will be able to verify the proportion of the tax he will have to pay." By the general scheme it is estimated that while "the full amount of the required revenue will be raised, the burden of taxation will fall equally upon all."

RAILWAYS IN THE ISLAND OF SARDINIA.—The *Opinione Nazionale* states that a company of English capitalists have applied to the Italian Minister of Public Works for the concession to construct all railways in the Island of Sardinia, in consideration of the Government guaranteeing them the sum of 30,000fr. for every kilometre of railway laid down, and ceding them 300,000 hectares (700,000 English acres) of crown lands.

BRIDGES IN FRANCE.—The number of bridges in France on which tolls are paid, says the *Salut Public* of Lyons, is about 400. On the Rhone, between Serrières and Saint-Ésprit, there are eleven, which are a heavy tax on the inhabitants of Lyons, as they must cross them to reach the Lyons and Marseilles Railway. It is hoped that the Government will ere long introduce a general measure for suppressing these tolls by indemnifying the parties interested.

HARWICH HARBOUR.—Near the beginning of the present century, a trade in cement-stone, obtained by dredging, had begun in Harwich; and a great demand arose when it was determined to fortify the port. The result of all this dredging has been that the natural barrier to the stroke of the sea has been removed; and the shingle has so accumulated that the mouth of the harbour is closing up. A select committee of the House of Commons has just reported upon the matter; and, in addition to dredging the entrance to the harbour, a groyne or breakwater is suggested; the cost of the works being estimated at from 10,000*l.* to 16,000*l.*

DUPLICATE EQUESTRIAN STATUE OF LORD HARDINGE FOR LONDON. — As our readers would observe from our advertising columns of last week, it is proposed to obtain for London a duplicate of Foley's statue of the late Lord Hardinge executed for Calcutta. The main object of the effort is to secure to the nation one of the finest art-works of modern times; and it is to be hoped there will be no difficulty in doing so. The statue is now in the International Exhibition; so that the public have the opportunity of judging for themselves. The subscription list already reaches some four hundred pounds; and those inclined to add their names to it are requested to address to the Hon. Secs., Hardinge Statue, 22, Regent-street, S.W. We have before now urged the desirability of the step.

THE MIDDLE-LEVEL INUNDATION.—The dam has been so strengthened that it is not considered likely to be affected by the severest tide; and it has already stood the test of the spring-tides in a satisfactory manner. The syphons, which are to be placed over it, have not yet been fixed: it is stated that, if they act well, they will be permanently retained, and the expense of erecting a new sluice thus be avoided, as the syphons will be of large calibre,—in fact, with the same capacity of discharge as the waterway of the old sluice. Valves are to be placed in these huge instruments to preclude any reverting of the tide-water into the drain: air-chambers will be constructed on the summit of the arching tubes to contain the air that may collect in them; and a small steam-engine, erected on the bank, is to exhaust these chambers, and keep the syphons in operation. Should the trial be successful, great and continual expense will be saved, and a revolution accomplished in lowland drainage. The repair of the great breach will have next to be commenced.

DOMESTIC ARCHITECTURE IN SINGAPORE.—Within his own house, Whampoa lives entirely in the European fashion. One of his properties, which is several miles in circumference, has a spacious, elegantly-furnished mansion, with a splendid colonnade, a beautiful flower-garden, and a perfect menagerie of useful domestic animals. Within the house all the arrangements are European, with the exception of the oval doors, communicating between the great saloon and the antechambers, which are pushed into the wall on either side, and have a very surprising effect. In the evening, especially when the saloon is illuminated, if a person passes through this oval entrance, the effect is as of a life-size portrait set in a golden frame. It would not be a bad idea to introduce this Chinese form of doorway into our European residences and country seats; and it is assuredly not the only improvement in the decorative art which we could borrow with advantage from the Chinese. Whampoa's own favourite habitation is about four miles outside the town, and presents a curious admixture of European comfort and taste with Chinese notions of ornament. In the saloons, adorned with a quantity of neat fancy ornaments, are suspended from the walls verses and proverbs of the most renowned Chinese poets, all written on long elegantly-illustrated rolls of paper.—*Parthenon.*

TOXTETH LOCAL BOARD OF HEALTH.—At the last monthly meeting of the Toxteth Park Local Board of Health, Liverpool, the board (unsolicited) agreed to increase the salary of their surveyor, Mr. J. A. Hall, 50*l.* a year. Mr. Hall was appointed on the 7th of last January as engineer and surveyor to the board; and has since been engaged upon the sewerage plans of the district, which have just received the sanction of the Home Secretary.

NEW INVENTION IN GATES.—At the Agricultural Show in Battersea Park there are some gates exhibiting which are the invention of Mr. Thomas Webb, of Smallwood Manor. They are thus noticed in the *Times* correspondent's report:—"These new gates surprise you by opening upwards into the air; by opening of their own accord upon the approach of a vehicle; and by closing after it is passed; while horsemen can open the gate by grasping a bell-pull." Mr. Webb has some of the gates in use on his property. We must say a few words about the Show next week.

A LONG-CLOSED THEATRE REOPENED.—At the moment of the destruction of Pompeii by an eruption of Mount Vesuvius, A.D. 79, a theatrical representation was being given in the Amphitheatre. A speculator, named Langini, taking advantage of that historical reminiscence, has just constructed a theatre on the ruins of Pompeii; and the opening of which new theatre he announces in the following terms:—"After a lapse of 1,800 years, the theatre of the city will be reopened with 'La Figlia del Reggimento.' I solicit from the nobility and gentry a continuance of the favour constantly bestowed on my predecessor, Marcus Quintus Martius; and beg to assure them that I shall make every effort to equal the rare qualities he displayed during his management."

ST. GEORGE'S, NEW MILLS, DERBYSHIRE.—A stained and painted window has just been placed in the chancel of this church by Miss Ingham, as a thankoffering on recovery from severe illness. The window is of three pointed lights, each about 18 feet by 3 feet. The principal subjects represent three dispensations, viz.;—The Patriarchal, by the offering up of Isaac; the Mosaic, by Moses lifting up the brazen serpent in the wilderness; and the Christian, by the Crucifixion. The figures in these subjects are 4 feet in height, and in strong outline, to suit the style of the church (which is Early English). Below them are three small subjects, viz.:—The Saviour's Birth, Baptism, and Last Supper. In the upper part of the window are the descending dove, the emblem of the Trinity Alpha and Omega, &c. The window has been designed and executed by Messrs. R. B. Edmundson & Son, of Manchester.

TENDERS.

For New Warehouse, London-wall, for Messrs. Gooch & Cousens. Mr. Porter, architect:—

Mansfield	£15,960	0	0
Patman & Co	15,689	0	0
Lucas	15,230	0	0
Brown & Robinson	14,980	0	0
Laurence	14,870	0	0
Oxford	14,636	0	0
Holland	14,598	0	0
I'Anson	14,480	0	0

For additions to Erleigh-hill House, Reading. Messrs. Poulton & Woodman, architects:—

Woodroffe	£1,560	0	0
Wheeler	1,547	0	0
Matthews	1,497	0	0
Sheppard	1,433	0	0
Strong	1,418	0	0
Searle (accepted)	1,394	0	0

For a pair of Semi-detached Villas, Spencer-road, New Wandsworth. Mr. G. H. Page, architect:—

J. & C. W. Todd	£889	0	0
Fish	870	0	0
Kendell	847	0	0
Thorton	775	13	0
Bass	740	0	0

For New Public-house Front, Hackney-road. Mr. Cæsar A. Long, architect:—

Evans	£243	10	0
Scott	216	0	0
Hardy	177	16	0
Larke	174	0	0
Power	163	0	0
Skinner, Brothers	160	0	0

For re-building Boys' School, and for the erection of Class-rooms, for the Trustees of St. Mark's National Schools, Whitechapel. Mr. John Hudson, architect:—

	Boys' School.	Class-Rooms.
Jacobs	£685	£360
Dudley	575	325

For alterations at the Joan of Arc, Roman-road. Mr. F. F. Holsworth, architect:—

Harvey	£191	0	0
Kent	185	0	0
Clarke & Mannock	176	0	0

For Villa, Oswestry. Messrs. Bidlake & Spaull, architects:—

Climie	£2,302	9	2
Treasure	2,180	0	0

For the erection of a Gallery in Lecture-hall of Sunday School Union. Messrs. Searle, Son, & Yelf, architects:—

Turner & Son	£277	10	0
Stimpson	233	0	0
Warne	215	0	0

Exclusive of wrought-iron girders and stanchions.

For painting the Iron Fencing of St. Mary's Churchyard, Newington, in reply to advertisement in our columns, there were twenty-five tenders, ranging from 42*l.* to 10*l.* The tender of Henry Ransom, 12*l.*, was accepted.

For New Pipe Sewers for the district of Perry-fields, Maidstone. Mr. Bulmer, Maidstone, engineer:—

Crotchet	£2,685	0	0
Chambers	2,598	0	0
Sutton & Vaughan	2,293	0	0
Lee	2,200	0	0
Anscomb	2,191	0	0
Pearson	2,197	0	0
Bugbird	2,179	0	0
Cobb	2,175	0	0
Shrubsole	2,155	0	0
Sills	2,148	0	0
Sharon	1,945	0	0
Naylar	1,843	0	0
Coles (accepted)	1,388	0	0

For Boundary Walls and Gates to the Great Malvern Hotel. Messrs. Elmslie, Franey, & Haddon, architects:—

Perkins (accepted)	£1,150	0	0

For covered way to lead from platform of Station to the Great Malvern Hotel. Messrs. Elmslie, Franey, & Haddon, architects:—

Perkins (accepted)	£830	0	0

For Schools for the Trustees of Ashton's Charity, Dunstable, Bedfordshire. Mr. G. Somers Clarke, architect. Quantities by Messrs. Batstone & Hunt:—

Hinton	£5,422	9	0
Lucas, Brothers	5,310	0	0
Myers & Sons	5,215	0	0
Conder	4,884	0	0
Kirk & Parry	4,748	0	0
Bell & Sons	4,735	0	0
Parker	4,540	0	0

For a Nine-roomed detached Villa, for the Rev. E. Davies, minister of the Baptist Chapel, Belvedere, Kent. Messrs. Habershon & Pete, architects:—

Lamb	£715	0	0
Blofield	650	0	0
Tear	458	0	0

For building St. Jude's Church, Gray's-Inn. Mr. Joseph Peacock, architect:—

White	£7,273	0	0
Patman & Co.	6,838	0	0
Sawyer	6,743	0	0
Mansfield	6,567	0	0
Holland	6,410	0	0
Dove	5,980	0	0
Myers	5,957	0	0
Jackson & Co.	5,955	0	0
Carter	5,792	0	0

For the erection of one pair of semi-detached villas, and six cottages, at Bromley, Kent, for Mr. S. Moore. Mr. J. Wimble, architect:—

	Villas.	Cottages.
Palmer	£1,362	£1,083
Todd	1,000	720
George	995	830
H. & C. Bond	990	900
Dennis	949	797
T. & C. W. Todd	850	720
Simmons	..	946
C. Simmons	..	780

For house at Chislehurst, for Mr. Charrington. Mr. W. G. Bartleet, architect. Quantities supplied by Mr. W. Campbell:—

Wood	£2,877	0	0
Conder	2,788	0	0
Mansfield	2,770	0	0
Tompson	2,760	0	0
Piper & Wheeler	2,730	0	0
Winder	2,668	0	0
Rider	2,640	0	0
Downs	2,627	0	0
Wills	2,595	0	0
Todd, Brothers	2,576	0	0

For Congregational Chapel and Schools, Leek. Mr. Sugden, architect. The following have been accepted for the works of the above buildings:—

Noden, for excavator, bricklayer, and stonemason's works, including the materials of the old buildings	£1,579
W. & J. Nixon, for carpenter, joiner, slater, and plasterer's works	1,020
J. & J. Hudson, for carpenter and joiner's works to a portion of the school buildings	130
J. J. Howard, for plumber, glazier, and painter's works	273

TO CORRESPONDENTS.

W. E. M. (view has already appeared elsewhere).—A Lover of Colour. M. E. H.—J. E. D. V.—E. H. (send plans). — Colour (we want no personalities, and will not print them. We desire to be guided by a better principle than mere wish to please correspondents). — J. B.—C. G. S.—E. H. R. (no power is given by fly-wheel: it simply husbands power).—A Cure.—G. M.—Rev. Mr. R.—F. W. (report referred to was not enclosed).—F. S.—S. S. — T. W. H. M. — R. B.—W. S.—E. A. S.—H. de M.—J. B. (we cannot supply addresses).